AR201-13380B

Olefin Hydroformylation Products Category

Robust Summaries
Mammalian Health Effects

CAS Number	Product name	Olefin	Alcohol
68527-03-7	Pentene, HOF	C5	C6
68938-02-3	Pentene, HOF, low-boiling	C5	C6
70955-11-2	Hexene, HOF	C6	C7
70955-03-2	Hexene, HOF, low-boiling	C6	C7
68526-80-7	Alcohols, C6 and C8 iso, distillation residues	-	C6, C8
70955-04-3	Hexene, HOF, high-boiling	-	C7-8
68527-04-8	Heptene, HOF	C7	C8
68526-96-5	Heptene, HOF, low-boiling	C7	C8
68526-88-5	Heptene, HOF, high-boiling	-	C8-9
68527-05-9	Octene, HOF	C8	C9
68938-03-4	Octene, HOF, low-boiling	C8	C9
68526-89-6	Octene, HOF, high-boiling	-	C9-10
68938-04-5	Nonene, HOF	C9	C10
68526-93-2	Nonene, HOF, low-boiling	C9	C10
68526-90-9	Nonene, HOF, high-boiling	-	C10-11
68516-18-7	Decene, HOF	C10	C11
68527-06-0	Dodecene, HOF	C12	C13
68526-92-1	Dodecene, HOF, low-boiling	C10-12	C13
68526-91-0	Dodecene, HOF, high-boiling	-	C13-14

Prepared by:

ExxonMobil Chemical Company

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Acute Toxicity

Test Substance	Hexanol, branched and linear
CAS No.	68526-79-4
Method/Guideline	Other
Type of Study	Oral LD_{50}
GLP	Pre-GLP
Year	1960
Species/strain	Rats/Sprague-Dawley
Sex	Males
No. of animals/sex/dose	5 rats/dose
Route of administration	Gastric Intubation
Vehicle	None
Frequency of Treatment	Single exposure
Dose/Concentration Levels	26, 82, 259, 820, 2591, 8200 mg/kg
Control group and Treatment	None
Remarks on Test Conditions	After a three to four hour fasting period, groups of 5 rats received the test material at dose levels of 26, 82, 259, 820, 2591, and 8200 mg/kg of body weight. The results were converted to weight units by means of the specific gravity. Observations for signs of toxicity were made immediately and at one and 24 hours after compound administration and daily for a period of 7days. Gross necropsy examinations were performed on all animals that died or were killed.
Results	LD_{50}= 3670 mg/kg
Remarks	None of the animals died in the 26, 82, 259, and 820 mg/kg dose groups. One of the animals in the 2591 mg/kg group died within 24 hours of dosing. All animals in the 8200 mg/kg group died within 4 hours following dose administration. Treatment resulted in depression (i.e. inactivity, depressed righting reflexes, ataxia) and labored respiration. These signs had an early onset and recovery was complete by the second day after dosing. Gross necropsy on the animals that died showed congested kidneys. Also, animals that died during the first hour after administration showed evidence of gastrointestinal irritation.
Conclusions	Under the conditions of this study, Hexanol, branched and linear has a low order of acute oral toxicity in rats.
Data Quality	1 - Valid without restrictions
Reference	Hazleton Laboratories (1960). Acute oral administration, acute dermal application, and acute inhalation exposure. Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Hexanol, branched and linear
CAS No.	68526-79-4
Method/Guideline	Other
Type of Study	Acute dermal toxicity
GLP	Pre-GLP
Year	1960
Species/strain	Albino Rabbits
Sex	Males and Females
No. of animals/sex/dose	2 rabbits/sex/dose
Route of administration	Dermal Application
Vehicle	None
Frequency of Treatment	Single exposure
Dose/Concentration Levels	82, 259, 820, and 2600 mg/kg
Control group and Treatment	None
Remarks on Test Conditions	A single dermal application of the test material was made to four groups of four rabbits at doses of 82, 259, 820, and 2600 mg/kg. The results were converted to weight units by means of the specific gravity. The test material was applied to intact abdominal skin and covered with an occlusive covering for 24 hours. Observations for signs of toxicity were made at one, four and 24 hours after compound administration and thereafter for a total of 7 days. Gross necropsies were performed on all animals at the end of the observation period.
Results	LD_{50} > 2600 mg/kg
Remarks	There were no mortalities at any dosage level tested. The LD_{50} in albino rabbits is greater than the highest dose tested (approx. 2.6 g/kg body weight). Signs of toxicity included labored respiration and central nervous system depression. All animals recovered within 4-48 hours after the exposure period began. Moderate erythema and edema were observed.
Conclusions	Under conditions of this study, Hexanol, branched and linear has a low order of acute dermal toxicity in rabbits.
Data Quality	2 - Valid with restrictions.
Reference	Hazleton Laboratories (1960). Acute oral administration, acute dermal application, and acute inhalation exposure. Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Hexanol, branched and linear
CAS No.	68526-79-4
Method/Guideline	Other
Type of Study	Inhalation LC_{50}
GLP	Pre-GLP
Year	1960
Species/strain	Rats/Wistar, Mice/Swiss, Guinea Pigs/English short hair
Sex	Males
No. of animals/sex/dose	10/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment	Single 6 hour exposure
Dose/Concentration Levels	1060 ppm
Control group and Treatment	None
Remarks on Test Conditions	Rats, mice, and guinea pigs received a single, 6-hour exposure to the test material in air. Exposures were at atmospheres nearly saturated with vapors of the alcohol (1060 ppm). The exposure was conducted in a 500-liter stainless steel inhalation chamber equipped at the inlet with a device for generating a near-saturated vapor of the test material. Vapor was generated by using two separate fritted disk glass bubblers, connected in parallel, each containing 200 ml. of the test material. Air flow through each bubbler was 18 liters/minute, so the total flow through the chamber was 36 liters/min. Actual chamber concentration was not measured during the exposure. The theoretical chamber concentration was calculated to be 1060 ppm based upon the amount of test material that vaporized and the rate of air flow. During exposure, all animals were observed for gross signs of toxicity at 30-minute intervals. Gross necropsies were performed on animals 24 hours after exposure.
Results	LC_{50} > 1060 ppm for rats, mice and guinea pigs.
Remarks	No deaths were seen during or after the exposure period. Thirty minutes after exposure, slow, deep respiration was observed in all three species. After 90 minutes of exposure, all three species exhibited gasping, labored respiration, lacrimation and nasal discharge. These signs persisted until the termination of exposure. Gross necropsy results indicate that the test material produced slight lung congestion in all animals. All other tissues and organs were unremarkable.
Conclusions	Under the conditions of this study, Hexanol, branched and linear has a low order of acute inhalation toxicity in rats, mice and guinea pigs.
Data Quality	2 - Valid with restrictions - No analysis of exposure atmosphere.
Reference	Hazleton Laboratories (1960). Acute oral administration, acute dermal application, and acute inhalation exposure. Unpublished report.
Date last changed	September, 2000

Repeat Dose Toxicity

Test Substance	Hexanol, branched and linear
CAS No.	68526-79-4
Method/Guideline	Other
Test Type	Repeated Dermal Application
GLP	Pre-GLP
Year	1961
Species/strain	Albino Rabbits
Route of administration	Dermal
Duration of test	12 days
Number of animals	8 (2/sex/dose)
Dose/Conc. Levels	0.4 g/kg and 2.0 g/kg
Sex	Males and Females
Frequency of treatment	Single daily treatment for 10 days
Control group and treatment	Isopropyl alcohol
Remarks on Test Conditions	Undiluted control and test materials were applied to intact skin of the animals. Materials were applied once daily for a total of ten applications with a one-day rest period between the third and fourth and eighth and ninth applications. The exposed skin area of each animal was approximately 10% of the total body surface at the 0.4 g/kg dosage level and approximately 40% of the total body surface at the 2.0 g/kg dosage level. After the first application, exposed skin was covered by rubber dental damming. In subsequent applications, loose gauze and adhesive tape were used to cover the exposed area since the authors felt that the damming itself may have induced some irritation. Each exposure period lasted approximately 18-24 hours. Animals were observed daily throughout the study and body weights were recorded prior to each application and at study termination. Clinical hematology and urinalysis were performed at the beginning of the study and 24 hours after the final application of test material. Animals were sacrificed 48 hours after the tenth application and brain, liver, kidney, and blood samples were taken. In addition, samples of brain, thyroid, lung, heart, liver, kidneys, adrenals, skin, and bone marrow were preserved.
Results	NOAEL for systemic toxicity = 2.0 g/kg
Remarks	There was no evidence of systemic toxicity at either dose of the test substance. Histopathological findings were unremarkable. Repeated application of the test material to the skin of albino rabbits at both dose levels produced moderate to marked degree of irritation. A slight to marked degree of edema was observed in two low-dose animals and three high-dose animals following one or more of the first three applications. Also, the exposed skin of two high-dose animals showed necrosis.
Conclusions	Under the conditions of this study, Hexanol, branched and linear can produce moderate skin irritation following repeated dermal exposures. However, the test material did not produce any evidence of systemic toxicity under the conditions of this study.
Data Quality	2 - Valid with restrictions.
Reference:	Esso Research and Engineering Company (1961). Unpublished Report.
Date last changed	September, 2000

Developmental Toxicity

Test Substance	1-Hexanol
CAS No.	--
Method/Guideline	Other
Type of Study	Developmental Toxicity
GLP	Not specified
Year	1989
Species/strain	Rats/Sprague-Dawley
Sex	Females
No. of animals/sex/dose	15 dams/treatment
Route of administration	Inhalation
Frequency of treatment	7 hrs/day; Gestation days 1-19
Dose/Concentration Levels	3500 mg/m^3 (Saturated vapors)
Control group and treatment	15 sham-exposed rats
Statistical methods	MANOVA, ANOVA, Kruskal-Wallis test
Remarks on Test Conditions	Throughout the study, all animals were housed under standard environmental conditions and allowed free access to food and water except when the pregnant females were in the exposure chamber. Following mating, sperm-positive females were placed in cages and weighed. Dams were weighed daily for the first week of exposure and weekly thereafter. Exposures were conducted in Hinners-type chambers. The purity of the test substance was ≥ 99% as measured by gas chromatography. A constant flow of the test substance was mixed with a known volume of heated compressed air, resulting in instantaneous vaporization of the test substance, which then flowed into the chamber. The concentration of the test substance was monitored continuously and recorded every hour. Calibration checks were completed daily. Exposure concentrations were verified on a weekly basis using a secondary method of analysis. The highest concentration of vapor that could be generated was 3500 mg/m^3. Dams were exposed from days 1-19 of gestation. On day 20, dams were sacrificed by CO_2 asphyxiation, and the uterus and ovaries were removed and examined for corpa lutea, implantations, resorption sites, and live fetuses. Fetuses were removed and examined for external malformations, sexed, weighed, and examined for visceral or skeletal defects.
Results	NOAEL > 3500 mg/m^3
Remarks	The test substance was administered by inhalation to reflect the route of exposure found in industry. However, due to the low volatility of the alcohols, concentrations sufficient to induce maternal toxicity could not be achieved. There were no significant fetal malformations associated with inhalation of 1-hexanol by the dam. There was a slight but statistically significant increase in resorptions (1.3 vs. 0.4 per litter for controls). However, this resorption mean was still in the range seen in historical controls.

Conclusions	Inhalation of saturated vapors of 1-hexanol is not maternally toxic or teratogenic in rats.
Data Quality	2 - Reliable with restrictions.
Reference	B.K. Nelson, W.W. Brightwell, A. Khan, E.F. Krieg, Jr., A.M. Hoberman, "Developmental toxicology evaluation of 1-pentanol, 1-hexanol, and 2-ethyl-1-hexanol administered by inhalation to rats." (1989) Journal of the American College of Toxicology **8(2)**: 405-410. NIOSH, Division of Biomedical and Behavioral Sciences
Date last changed	13-Sep-00

Genetic Toxicity

Test Substance	Alkenes, C6
CAS No.	68526-52-3
Method	EPA OTS 798.5395
Type of Study	Mouse Micronucleus
GLP	Yes
Year	1993
Species/Strain	Mouse/ B6C3F1
Sex	Male and Female
Number/sex/dose	15/sex
Route of administration	Inhalation
Vehicle	NA
Exposure Period	6 hours/day for 2 consecutive days
Concentrations	Target exposure: 1000 ppm; Actual mean exposure: 1057 ppm (Saturated vapors, no aerosol)
Controls	Positive: Cyclophosphamide (40 mg/kg) in water by oral gavage Negative: Air (Sham exposure)
Statistical Methods	To determine the percentage of micronuclei, 1000 polychromatic erythrocytes from each animal were examined for micronuclei. To determine the percentage of polychromatic erythrocytes, the number of polychromatic erythrocytes in a total of 1000 erythrocytes was determined. Statistical analysis included calculation of means and standard deviations of the micronuclei data and a test of equality of group means by a standard one way analysis of variance at each time period. When the ANOVA was significant, comparisons of carrier control to dosed group means were made according to Duncan's Multiple Range Test. Data from both males and females were analyzed as a single group to facilitate comparisons to published data.
Remarks on Test Conditions	Vapors were generated by delivering the test material with a piston pump to a glass cylinder with heating tape. Vapors were drawn into the chamber with air flow at a rate of 200 liters/minute. Nominal and actual concentrations were determined by net weight loss of the test material and by gas chromatography, respectively. Animals were exposed to vapors of the test substance for 6 hours per day on 2 consecutive days. During each exposure, animals were observed hourly. The positive control, cyclophosphamide, was administered by oral gavage as a single dose. Animals from the treated group were sacrificed by carbon dioxide asphyxiation at appropriately 24 hours after the second day of exposure. Animals treated with cyclophosphamide were sacrificed 24 hours following dose administration. Immediately upon sacrifice, the bone marrow was removed from both femurs of each animal, resuspended, and prepared for microscopy. Samples were blindly coded and stained with acridine orange.
Results	Negative
Remarks for Results	The test material was not clastogenic since it did not induce a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes, indicating that the test substance is not clastogenic. In addition, the test substance did not induce a statistically significant decrease in the mean percent of polychromatic erythrocytes, indicating that the test substance did not induce bone marrow toxicity. The positive control did induce a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes and was therefore clastogenic. The sham control values for the mean number of micronucleated polychromatic erythrocytes were within the normal range for the negative control.

Conclusions	Under the conditions of this assay, Alkenes, C6 are not clastogenic following inhalation exposure in mice.
Data Quality	1 - Reliable without restrictions
Reference	"In vivo mammalian bone marrow micronucleus assay: inhalation dosing method," Exxon Biomedical Sciences, Inc. 1991
Date last changed	December, 2000

Genetic Toxicity

Test Substance	Alkenes, C6
CAS No.	68526-52-3
Method	EPA OTS 798.5395
Type of Study	Mouse Micronucleus
GLP	Yes
Year	1991
Species/Strain	Mouse/ B6C3F1
Sex	Male and Female
Number/sex/dose	15/sex
Route of administration	Oral gavage
Vehicle	NA
Exposure Period	Single dose
Concentrations	1.25, 2.5, and 5 g/kg. Concentrations were based on the results of a range-finding study.
Controls	Positive: Cyclophosphamide (40 mg/kg) Negative: Corn oil
Statistical Methods	To determine the percentage of micronuclei, 1000 polychromatic erythrocytes from each animal were examined for micronuclei. To determine the percentage of polychromatic erythrocytes, the number of polychromatic erythrocytes in a total of 1000 erythrocytes was determined. Statistical analysis included calculation of means and standard deviations of the micronuclei data and a test of equality of group means by a standard one way analysis of variance at each time period. When the ANOVA was significant, comparisons of carrier control to dosed group means were made according to Duncan's Multiple Range Test. A standard regression analysis was performed to test for a dose response. Sexes were analyzed separately.
Remarks on Test Conditions	The test material and the carrier were administered by oral gavage as a single dose to mice (not fasted). The positive control, cyclophosphamide, was administered by intraperitoneal injection as a single dose. Animals from the appropriate groups were sacrificed by carbon dioxide asphyxiation at appropriately 24, 48 and 72 hours after dose administration. Animals dosed with cyclophosphamide were sacrificed at 24 hours only. Immediately upon sacrifice, the bone marrow was removed from both femurs of each animal, resuspended, and prepared for microscopy. Samples were blindly coded and stained with acridine orange.
Results	Positive

Remarks for Results	The test material induced a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes per 1000 cells at 5.0 g/kg for the 24-hour males and females (6.8 +/- 3.12 and 5.4 +/- 2.1, respectively). The mean number of micronucleated polychromatic erythrocytes for the positive controls at 24 hours for males and females were 36.2 +/- 10.5 and 30.4 +/- 9.0 and the negative controls were 2.4 +/- 0.9 and 2.6 +/- 1.5. The increase in micronucleated polychromatic erythrocytes observed at 24 hours was dose-related. However, at 48 and 72 hours after the initial exposure, the mean number of micronuclei did not differ between the control and treated groups. The test substance did not induce a statistically significant decrease in the mean percent of polychromatic erythrocytes, indicating that the test substance is not toxic to bone marrow. The positive control induced significant increases in the mean number of micronucleated polychromatic erythrocytes. The positive control also induced a statistically significant decrease in the mean percent of micronucleated polychromatic erythrocytes in male mice. Carrier control values for the mean percent of micronucleated polychromatic erythrocytes and the mean number of micronucleated polychromatic erythrocytes were within the normal range for the negative controls. Alkenes, C6 produced a slight, transient increase in micronucleated polychromatic erythrocytes at the highest level by oral gavage. However, given that inhalation is the primary route of industrial exposure, a micronucleus study was repeated with inhalation as the route of administration. This study produced negative results (IUCLID section 5.6). In addition, Alkenes, C6 are not mutagenic *in vitro*. Collectively, these data suggest that Alkenes, C6 are not expected to be genotoxic.
Conclusions	Under the conditions of this study, Alkenes, C6 were clastogenic to the bone marrow of B6C3F1 mice when administered by oral gavage at 5.0 g/kg 24 hours prior to analysis, but not at 48 and 72 hours post-exposure.
Data Quality	1 - Reliable without restrictions
Reference	"In vivo Mammalian Bone Marrow Micronucleus Assay: Oral Gavage Method," Exxon Biomedical Sciences, Inc., 1991.
Date last changed	December, 2000

Genetic Toxicity

Test Substance	Alkenes, C6
CAS No.	68526-52-3
Method/Guideline	EPA OTS 798.5265
Test Type	Bacterial Mutagenicity - Ames Assay
GLP	Yes
Year	1991
Species/strain	Salmonella typhimurium; TA98; TA100; TA1535; TA1537; TA1538
Metabolic Activation	With and without S9 fraction of livers from rats pretreated with Aroclor 1254.
Dose/Conc. Levels	3.2, 10, 32, 100 and 320 μg/plate (Doses were based on a pre-test for toxicity)
Statistical methods	The mean plate count and standard deviation for each dose point were determined. Any test value that was equal to or greater than three times the mean value of the concurrent vehicle control was considered to be a positive dose.
Remarks on Test Conditions	
Solvent:	DMSO was used for controls; Ethanol was used for the test material
Positive Controls:	2-Aminoanthracene, 9-Aminoacridine, 2-Nitrofluorene, N-methyl-N-nitro-N-nitrosoguanidine
Negative Controls:	Vehicle controls were dosed at 0.1 ml/plate ethanol and 0.1 ml/plate DMSO
	To determine the highest dose of compound to be used in the assay, a dose range from 1 to 10,000 μg/plate was tested. Only strain TA98 was used. The toxicity pretest was repeated and toxicity was observed as a reduction in both background and revertant colony counts. 320 μg/plate was selected as the high dose to be used on the mutagenesis assay for both the saline (-S9) and the +S9 treated plates.
	A repeat assay was performed in order to verify the data produced in the initial assay.
Results	Negative
Remarks	The test material did not induce a dose related increase in the mutation frequencies of any of the tester strains either in the presence or absence of metabolic activation. All positive and negative controls responded in a manner consistent with data from previous assays.
Conclusions	Under the conditions of this study the test material is not mutagenic for the Salmonella tester strains at doses up to and including 320 μg/plate.
Data Quality	1 - Valid without restrictions
Reference:	Microbial Mutagenesis in *Salmonella*: Mammalian Microsome Plate Incorporation Assay; Exxon Biomedical Sciences, Inc., 1991.
Date last changed	December, 2000

Acute Toxicity

Test Substance	Alcohols, C6-8 branched
CAS No.	70914-20-4
Method/Guideline	Other
Type of Study	Acute oral toxicity
GLP	Not specified
Year	1979
Species/strain	Rats/Sprague/Dawley
Sex	Males
No. of animals	5/dose
Route of administration	Oral Intubation
Vehicle	None
Frequency of Treatment	Single Exposure
Dose/Concentration Levels	1.0, 1.47, 2.15, 3.16, 4.64, 6.81 and 10.0 g/kg
Control group and Treatment	None
Remarks on Test Conditions	Animals were fasted for approximately 18 hours prior to dosing. The undiluted test material was administered by oral intubation at doses of 1.0, 1.47, 2.15, 3.16, 4.64, 6.81 and 10.0 g/kg (5 rats/dose). Animals were observed for signs of toxicity at 1, 2, and 4 hours after dosing and daily thereafter for fourteen days.
Results	LD_{50} = 3.9 g/kg
Remarks	All animals in the 6.81 and 10.00 g/kg groups died. Two of the five animals in the 4.64 g/kg group died and 1 animal each in the 1.00, 2.15, and 3.15 g/kg groups died. No animals in the 1.47 g/kg group died. Except for one animal in the 2.15 g/kg group, all animals that died did so within three days of dosing. Signs of toxicity observed included respiratory rate decreases, fecal staining, decreased motor activity and hypothermia.
Conclusions	Under the conditions of this study, Alcohols, C6-8 branched have a low order of acute oral toxicity.
Data Quality	2 - Valid with restrictions - only one sex tested.
Reference	"Acute Oral Toxicity Study in Rats," Esso Research and Engineering (1979). Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alcohols, C6-8 branched
CAS No.	70914-20-4
Method/Guideline	Other
Type of Study	Acute dermal toxicity
GLP	Not specified
Year	1979
Species/strain	Albino Rabbits/New Zealand White
Sex	Males and Females
No. of animals/sex/dose	2 rabbits/sex/dose
Route of administration	Dermal
Vehicle	None
Frequency of Treatment	Single dose
Dose/Concentration Levels	50, 200, 794 and 3,160 mg/kg
Control group and Treatment	None
Remarks on Test Conditions	Doses of 50, 200, 794 and 3160 mg/kg were administered to sixteen rabbits (two/sex/dose level). The undiluted test material was applied to intact skin and the animal was then wrapped in an impervious plastic sleeve. Following approximately 24 hours of exposure, the wrappings were removed and the test site was wiped free of excess test material. After 30 minutes, dermal observations were made. Observations were recorded at 1, 2 and 4 hours after dosing and daily thereafter for 14 days.
Results	LD_{50} > 3,160 mg/kg of body weight.
Remarks	There were no deaths at any dose level in either sex. All animals at the 50 mg/kg level exhibited very slight erythema and no edema. Well-defined erythema without edema was observed in animals at 200 and 794 mg/kg dose levels. At the 3160 mg/kg dose level one animal exhibited moderate to severe erythema and three animals exhibited areas of necrosis. Necropsy examinations did not reveal any significant abnormalities. Dark red foci were observed in the lungs of males (50mg/kg) and females (3,160 mg/kg), however this effect was not dose-related. Dark red foci of the adrenals were observed in males and females at 200, 794, and 3,160 mg/kg.
Conclusions	Under the conditions of this study, Alcohols, C6-8 branched have a low order of acute dermal toxicity in rats.
Data Quality	2 - Valid with restrictions - GLP not specified.
Reference	Esso Research and Engineering (1979). Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alcohols, C6-8 branched
CAS No.	70914-20-4
Method/Guideline	Other
Type of Study	Acute inhalation toxicity
GLP	Not specified
Year	1979
Species/strain	Rats/Sprague-Dawley, Mice/Swiss albino, Guinea pigs/Hartley
Sex	Males and Females
No. of animals/sex/dose	5/sex/dose
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment	Single, 6 hour exposure
Dose/Concentration Levels	0, 152 ppm
Remarks on Test Conditions	Animals (5/sex/dose) were held for a minimum equilibration period of 12 days. Animals were exposed to 152 ppm of the test material for six hours. To generate vapors, room air was drawn through the test material at a flow rate of 103 l/min. The resulting maximum attainable vapors were passed through a Kjeldahl trap and flask prior to entering the glass exposure chamber containing the test animals. Weight loss was determined following exposure and was taken to be equal to the amount of test material delivered during exposure. The weight loss was divided by the total volume of air passed through the chamber to give the nominal concentration. All three species were exposed in the same chamber. For each species, a control group was also sham-exposed to room air. The animals were observed for abnormalities prior to exposure, at 15-minute intervals during the first hour of exposure and then hourly for the remainder of exposure. Subsequent evaluations were made for a total of 14 days. After fourteen days, gross necropsy was performed.
Results	LC_{50} > 152 ppm
Remarks	No abnormalities were noted in the control or exposed rats, mice or guinea pigs during the exposure period. Upon removal from the chamber, dry rales (1/10) and excessive salivation (2/10) were observed in exposed rats. During the 14-day observation period, excessive salivation was observed in mice (4/10) and nasal discharge (2/10) occurred. Necropsy examination revealed an increased incidence of lung discoloration in treated rats (6/10) and guinea pigs (8/10).
Conclusions	Under the conditions of this study, Alcohols, C6-8 branched have a low order of acute inhalation toxicity in rats.
Data Quality	2 - Valid with restrictions - Vapor concentration not analyzed.
Reference	Esso Research and Engineering (1980). Unpublished Report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alkenes, C6-8, C7 rich
CAS No.	68526-53-4
Method/Guideline	NA
Type of Study	Inhalation LC_{50}
GLP	Pre-GLP
Year	1979
Species/strain	Swiss albino Mice, Sprague-Dawley Rats, Hartley Guinea Pigs
Sex	Males and Females
No. of animals/sex/dose	5/sex/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment:	Single Dose
Dose/Concentration Levels:	42.3 mg/L for 6 hours; vapors only
Control group and Treatment:	Control animals (5/sex/species) were exposed to clean air as a sham exposure.
Remarks on Test Conditions	Room air, at a flow rate of 134 l/minute was bubbled through test material in a flask to produce a vapor-laden airstream that was directed, undiluted, into the exposure chamber. The nominal exposure concentration was calculated by dividing the mass of test material consumed by the total volume of air passing through the chamber. Animals were observed throughout the exposure period for signs of toxicity. Following the exposure period, animals were observed for signs of toxicity daily for 14 days. Body weights were recorded on Days 0, 1, 2, 4, 7, and 14. Gross necropsies were performed on any animals that died during the study and all animals at the completion of the study. During the necropsies, the lungs with trachea, kidneys, and liver were preserved for possible histopathological examination.
Results (LD_{50} or LC_{50}):	**LC_{50} > 42.3 mg/L for 6 hours**
Remarks	In mice, exposure to 42.3 mg/L of the test substance resulted in 1 death 1 hour into the exposure period. All other mice survived until the end of the study. None of the rats died during the study. Two guinea pigs died by 45 minutes into the exposure period. The remaining guinea pigs survived until the end of the study. All exposed species exhibited signs of systemic toxicity including labored breathing, prostration, body tremors, and ataxia during the exposure. However, in the surviving animals, these signs completely reversed within 24 hours following the exposure. Liver discoloration was noted upon necropsy in the mouse and the two guinea pigs that died during the exposure. Otherwise, no significant findings were observed at necropsy.
Conclusions	Under conditions of this study, Alkenes, C6-8, C7 rich have a low order of acute inhalation toxicity in rodents.
Data Quality	2 - Valid with restrictions - no analysis of exposure atmosphere.
Reference	"An Acute Inhalation Toxicity Study of MRD-ECH-78-32 in the Mouse, Rat, and Guinea Pig," Bio/dynamics, Inc. for Exxon Research and Engineering Company, May 25, 1979.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C6-8, C7 rich
CAS No.	68526-53-4
Method/Guideline	NA
Type of Study	Dermal LD_{50}
GLP	Pre-GLP
Year	1978
Species/strain	Albino rabbits
Sex	Males and Females
No. of animals/sex/dose	2/sex/dose
Route of administration	Dermal
Vehicle	NA
Frequency of Treatment:	Single 24-hour exposure
Dose/Concentration Levels:	200 and 3160 mg/kg.
Control group and Treatment:	NA
Remarks on Test Conditions	Undiluted test material was applied to clipped, abraded abdominal skin under gauze and thick plastic. Following the 24-hour exposure period, the wrapping was removed and the exposed area was wiped to remove residue. Animals were observed for gross signs of irritation and systemic toxicity 1,2,3, and 4 hours post dose and daily for 7 days. Following the post-exposure observation period, animals were weighed, sacrificed and necropsied. Throughout the study, food and water were available at all times and animals were housed individually.
Results (LD_{50} or LC_{50}):	**LD_{50} > 3160 mg/kg**
Remarks	No mortalities were observed at any dose tested. Lethargy and ataxia were observed in all animals, but these symptoms cleared by Day 2. Dermal reactions were generally moderate at 200 mg/kg and cleared by Day 14. In the high dose group, more severe dermal reactions, including moderate edema and severe erythema, persisted through the study. No significant fluctuations in body weight occurred. Necropsy findings were unremarkable except for a pus-filled liver in 1 rabbit from the high dose group.
Conclusions	Alkenes, C6-8, C7 rich have a low order of acute dermal toxicity.
Data Quality	1 - Reliable without restrictions
Reference	MB Research Laboratories, Inc., Acute Dermal Toxicity in Albino Rabbits, 1978.
Date last changed	October, 2000

Genetic Toxicity

Test Substance	Alkenes, C6-8, C7 rich
CAS No.	68526-53-4
Method	EPA OTS 798.5395
Type of Study	Mouse Micronucleus
GLP	Yes
Year	1993
Species/Strain	Mouse/ B6C3F1
Sex	Males and Females
Number/sex/dose	15/sex
Route of administration	Oral gavage
Vehicle	NA
Exposure Period	Single dose
Concentrations	1.25, 2.5, and 5 g/kg. Concentrations were based on the results of a range-finding study.
Controls	Positive: Cyclophosphamide (40 mg/kg) Negative: Corn oil
Statistical Methods	Analysis of variance (ANOVA), Duncan's Multiple Range Test
Remarks on Test Conditions	The test material and the carrier were administered by oral gavage as a single dose to mice (not fasted). The positive control, cyclophosphamide, was administered by intraperitoneal injection as a single dose. Animals from the appropriate groups were sacrificed by carbon dioxide asphyxiation at appropriately 24, 48 and 72 hours after dose administration. Animals dosed with cyclophosphamide were sacrificed at 24 hours only. Immediately upon sacrifice, the bone marrow was removed from both femurs of each animal, resuspended, and prepared for microscopy. Samples were blindly coded and stained with acridine orange.
Results	Negative
Remarks for Results	There was no statistically significant increase in the mean number of micronucleated polychromatic erythrocytes, indicating that the test material was not clastogenic. The positive control induced a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes, which indicates that the positive control is clastogenic. The test material did not induce a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes. In addition, the test material did not induce a significant decrease in the mean percent of polychromatic erythrocytes, which is a measure of bone marrow toxicity.
Conclusions	Under the conditions of this study, the test sample is not considered to be mutagenic at doses up to and including 5.0 g/kg.
Data Quality	1 - Reliable without restrictions
Reference	Exxon Chemical Company (1993). In Vivo Mammalian Bone Marrow Micronucleus Assay: Oral Gavage Dosing Method. Unpublished Report..
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alcohols, C7-9 branched
CAS No.	68526-83-0
Method/Guideline	OECD 401
Type of Study	Acute oral toxicity
GLP	Yes
Year	1988
Species/strain	Rats/Wistar
Sex	Males and Females
No. of animals/sex/dose	5/sex/dose
Route of administration	Oral gavage
Vehicle	None
Frequency of Treatment:	Single Dose
Dose/Concentration Levels	2000 mg/kg
Remarks on Test Conditions	After being fasted for 12 to 18 hours, animals were administered a single oral gavage dose of 2,000 mg/kg of the undiluted test article. Observations were made four times on day 1; and daily for 14 days.
Results	LD_{50} > 2000 mg/kg
Remarks	Following dosing, the following symptoms were observed: sedation, ventral body position in males, hunched posture, and ruffled fur. However, all animals had recovered within 6 days of dosing. At necropsy, no macroscopic abnormalities were observed.
Conclusions	Under the conditions of this study, Alcohols, C7-9 branched has a low order of toxicity.
Data Quality	1 – Reliable without restrictions
Reference	"Acute oral toxicity study with Alcohols, C7-9 branched in rats," (1988) unpublished report (RCC Research and Consulting Co. AG).
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alcohols, C7-9 branched
CAS No.	68526-83-0
Method/Guideline	Other
Type of Study	Acute dermal toxicity
GLP	Pre-GLP
Year	1960
Species/strain	Albino Rabbits
Sex	Males and Females
No. of animals/sex/dose	4 rabbits/sex/dose
Route of administration	Dermal; with occlusive binding
Frequency of treatment	Single 24 hour exposure
Dose/Concentration Levels	83, 262, 820, 2623 mg/kg (undiluted)
Control group and treatment	None
Remarks on Test Conditions	The test substance was applied dermally to rabbits (4/sex/dose) under occlusive binding and removed after 24 hours. The results were converted to weight units by means of the specific gravity. Animals were observed 1, 4, and 24 hours after initial application of Alcohols, C7-9 branched and once daily for the next 7 days. At the termination of the study, survivors were weighed and gross necropsies were performed.
Results	Dermal LD_{50} > 2623 mg/kg
Remarks	Animals in the 83, 262, and 820 mg/kg dose groups exhibited normal appearance and behavior throughout the study. At the highest dose (2623 mg/kg), animals exhibited labored respiration and were inactive. One animal in the high dose group died within 24 hours. The remaining animals in this dose group returned to normal appearance and behavior 2 days after the treatment.
Conclusions	Alcohols, C7-9 branched showed a low order of acute dermal toxicity under the conditions of this study.
Data Quality	1 - Reliable without restrictions
Reference	Hazleton Labs (1960). Acute oral, acute dermal, and acute inhalation toxicity. Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alcohols, C7-9 branched
CAS No.	68526-83-0
Method/Guideline	Other
Type of Study	Acute inhalation toxicity
GLP	Pre-GLP
Year	1960
Species/strain	Rats/Wistar, Mice/Swiss, Guinea pigs/English Short Hair
Sex	Males
No. of animals/sex/dose	10/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment:	Single 6 hour exposure
Dose/Concentration Levels	Saturated Vapors
Remarks on Test Conditions	Rats, mice, and guinea pigs were exposed to near-saturation levels (200 ppm) of vapors of Alcohols, C7-9 branched in a 500 L stainless steel inhalation chamber for 6 hours. Vapor was generated by using two separate fritted disk glass bubblers, connected in parallel, each containing 200 ml of the test substance. Air flow through each bubbler was 18 l/m, and the total flow through the chamber was 36 l/m. Actual chamber concentration was not measured; theoretical chamber concentration was calculated to be 200 ppm. Animals were observed at one-hour intervals during the exposure. Animals were observed 24 hours following exposure and then necropsies were performed.
Results	LC_{50} > 200 ppm
Remarks	There were no deaths during the treatment period. There were no apparent signs of toxicity or alterations to behavior other than blinking in rats and mice. No macroscopic abnormalities were observed at necropsy.
Conclusions	Under the conditions of this study, Alcohols, C7-9 branched has a low order of acute inhalation toxicity in rats, mice and guinea pigs.
Data Quality	2 - Valid with restrictions. No analysis of exposure atmosphere.
Reference	Hazleton Labs (1960). Acute oral, acute dermal, and acute inhalation toxicity. Unpublished report.
Date last changed	September, 2000

Genetic Toxicity

Test Substance	2-Ethyl-1-hexanol
CAS No.	104-76-7
Method	Other
Type of Study	Ames Assay
Test System	*S. typhimurium, E. coli*
GLP	Not specified
Year	1985
Species/Strain	*Salmonella typhimurium* /TA98; TA100; TA1535; TA1537; TA1538; *E. coli* WP2uvrA
Metabolic Activation	S9 mixture
Concentrations	1, 5, 10, 50, 100, 500, and 1000 ug/plate.
Statistical methods	Samples were run in duplicate. No further details provided.
Remarks on Test Conditions	2-Ethyl-1-hexanol (98% pure) was dissolved in DMSO at appropriate concentrations. 0.1ml of this mixture was added to 0.1 ml of bacteria and 0.5 ml of either S9 mix (Polychlorinated biphenyl-induced rat liver S9 mixture) or phosphate-buffered saline. Following a 20-minute pre-incubation, the mixtures were combined with agar and incubated for 48 hours. Colonies were scored with an automatic counter. All tests were performed in duplicate. 2-(2-Furyl)-3-(5-nitro-2-furyl)-acrylamide (AF-2), N-ethyl-N'-nitro-N-nitrosoguanidine (ENNG), 9-aminoacridine (9AC), 4-nitroquinoline-1-oxide (4NQO), benzo(a)pyrene (B(a)P), 2-aminoanthracene (2AA), and 2-nitrofluorene (2NF) were used as positive controls. In addition, water and DMSO were used as vehicle controls.
Results	Negative
Remarks for Results	In all of the strains tested, there was no evidence of mutagenicity of 2-ethyl-1-hexanol in the presence or absence of metabolic activation. The number of revertant colonies per plate did not vary significantly between the water, DMSO, or 2-ethyl-1-hexanol samples.
Conclusions	2-Ethyl-1-hexanol is not mutagenic in bacteria under the conditions of this study.
Data Quality	2- Reliable with restrictions (Similar to OECD 471)
Reference	H. Shimizu, Y. Suzuki, N. Takemura, S. Goto, H. Matsushita, (1985) "The Results of Microbial Mutation Test for Forty-Three Industrial Chemicals," *Japanese Journal of Industrial Health*, 27: 400-419.
Date last changed	October 3, 2000

Repeat Dose Toxicity

Test Substance	Iso-octanol
CAS No.	--
Method/Guideline	NA
Type of Study	14-day repeat dose
GLP	Not specified
Year	1984
Species/strain	Rats/Wistar
Sex	Male
No. of animals/sex/dose	5/treatment, 10/control; 1mmol/kg/day of iso-octanol (130 mg/kg/day)
Route of administration	Oral gavage.
Duration of test	14 days
Frequency of treatment	Once daily for 14 days
Vehicle	Polyethylene glycol 300
Statistics	Mean values compared to controls by Student's t-test.
Remarks on Test Conditions	After acclimation for 1 week, five animals received 1mmol/kg/day (130 mg/kg/day) of the test substance by oral gavage and ten animals received only the vehicle, PEG 300, daily for 14 days. Animals were sacrificed after 14 days by halothane overdose and blood was withdrawn by cardiac puncture and analyzed for plasma cholesterol and triglycerides. The liver was removed for histopathological analysis, analysis of catalase, and CN-insensitive palmitoyl CoA oxidation. Testicular weight was also determined.
Results	NOAEL = 130 mg/kg/day
Remarks	Iso-octanol did not significantly change body weight gain, liver to body weight ratio, or testis to body weight ratio when compared to vehicle controls. Iso-octanol did not induce any changes in glycogen vacuolation or fat vacuolation. The activity of peroxisome-associated enzymes and levels of cholesterol and triglyceride were not significantly different between animals treated with iso-octanol and vehicle controls. No hyperlipidemia was observed.
Conclusions	Under the conditions of this study, iso-octanol had a low order of sub-acute toxicity in male rats for the endpoints studied.
Data Quality	2 - Reliable with restrictions - Not a guideline study.
Reference	C. Rhodes, T. Soames, M.D. Stonard, M.G. Simpson, A.J. Vernall, C.R. Elcombe, "The absence of testicular atrophy and in vivo and in vitro effects on hepatocyte morphology and peroxisomal enzyme activities in male rats following the administration of several alkanols," (1984). Toxicology Letters 21: 103-109.
Date last changed	13-Sep-00

Repeat Dose Toxicity

Test Substance	Alcohols, C7-9 branched
CAS No.	68526-83-0
Method/Guideline	Other
Test Type	Repeated Dermal Application
GLP	Pre-GLP
Year	1961
Species/strain	Albino Rabbits
Route of administration	Dermal
Duration of test	12 days
Number of animals	8 rabbits (2/sex/dose)
Dose/Conc. Levels	0.4 g/kg and 2.0 g/kg
Sex	Males and Females
Frequency of treatment	Single Daily treatment for 10 days
Control group	Isopropyl alcohol, 2/sex
Statistical methods	Not specified
Remarks on Test Conditions	Undiluted control and test materials were applied to intact skin of the animals (2/sex/dose). Materials were applied once daily for a total of ten applications with a one-day rest period between the third and fourth and eighth and ninth applications. The exposed skin area of each animal was approximately 10% of the total body surface at the 0.4 g/kg dosage level and approximately 40% of the total body surface at the 2.0 g/kg dosage level. After the first application, exposed skin was covered by rubber dental damming. In subsequent applications, loose gauze and adhesive tape were used to cover the exposed area since the authors felt that the damming itself may have induced some irritation. Each exposure period lasted approximately 18-24 hours. Animals were observed daily throughout the study and body weights were recorded prior to each exposure and at study termination. Clinical hematology and urinalysis were performed at the beginning of the study and 24 hours after the final application of test material. Animals were sacrificed 48 hours after the tenth application, samples of brain, thyroid, lung, heart, liver, kidneys, adrenals, skin, and bone marrow were preserved.
Results	NOAEL for systemic toxicity = 2.0 g/kg
Remarks	Animals in all exposure groups displayed normal appearance and behavior throughout the study. Although a slight decrease in body weight was observed initially, animals regained weight by the end of the study. Repeat application of the control substance, isopropyl alcohol produced slight irritation characterized by slight to moderate erythema, atonia, and desquamation. Repeated application of Alcohols, C7-9 branched resulted in moderate to severe irritation. Fissuring and coriaceous skin were also observed at both the low and high dose levels. Necrosis was observed in the high dose animals as well. Clinical studies did not indicate any other signs of toxicity. There was a general increase in the hematocrit and erythrocyte values at the end of the study.

Conclusions	Under the conditions of this study, Alcohols, C7-9 branched can produce moderate skin irritation following repeated dermal exposures. However, the test material did not produce any evidence of systemic toxicity under the conditions of this study.
Data Quality	2 - Valid with restrictions
Reference	Esso Research and Engineering Company (1961). Repeat Dermal Application of Alcohols, C7-9 branched, Unpublished Report.
Date last changed	September, 2000

Developmental Toxicity

Test Substance	1-Octanol
CAS No.	NR
Method/Guideline	Other
Type of Study	Developmental Toxicity
GLP	Not specified
Year	1989
Species/strain	Rats/Sprague-Dawley
Sex	Pregnant females
No. of animals/sex/dose	15/dose
Route of administration	Inhalation
Frequency of treatment	7 hrs/day; Gestation days 1-19
Dose/Concentration Levels	400 mg/m^3
Control group and treatment	15 sham-exposed rats
Statistical methods	MANOVA, ANOVA, Kruskal-Wallis test
Remarks on Test Conditions	Throughout the study, all animals were housed under standard environmental conditions and allowed free access to food and water except when the pregnant females were in the exposure chamber. Following mating, sperm-positive females were placed in cages and weighed. Dams were weighed daily for the first week of exposure and weekly thereafter. Exposures were conducted in Hinners-type chambers. The purity of the test substance was ≥ 99% as measured by gas chromatography. A constant flow of the test substance was mixed with a known volume of heated compressed air, resulting in instantaneous vaporization of the test substance, which then flowed into the chamber. The concentration of the test substance was monitored continuously and recorded every hour. Calibration checks were completed daily. Exposure concentrations were verified on a weekly basis using a secondary method of analysis. The highest concentration of vapor that could be generated was 400 mg/m^3. Dams were exposed from days 1-19 of gestation. On day 20, dams were sacrificed by CO_2 asphyxiation, and the uterus and ovaries were removed and examined for corpa lutea, implantations, resorption sites, and live fetuses. Fetuses were removed and examined for external malformations, sexed, weighed, and examined for visceral or skeletal defects.
Results	Maternal and Developmental NOAEL ≥ 400 mg/m^3

Remarks	No treatment-related effects were observed in dams. There were no significant differences in maternal weight gain, feed consumption, and water intake between the control and treated groups. In addition, no signs of fetal toxicity were observed. The number of corpora lutea and resorptions, the sex ratio, and fetal weights were not significantly different between the control and treated groups.
Conclusions	Under the conditions of this study, exposure of pregnant rats to saturated vapors of 1-Octanol does not induce maternal or fetal toxicity.
Data Quality	2 - Reliable with restrictions
Reference	B.K. Nelson, W.W. Brightwell, A. Khan, E.F. Krieg, Jr., A.M. Hoberman, "Developmental toxicology assessment of 1-Octanol, 1-Nonanol, and 1-Decanol administered by inhalation to rats." (1990) Journal of the American College of Toxicology 9(1): 93-97. NIOSH, Division of Biomedical and Behavioral Sciences.
Date last changed	February, 2001

Developmental Toxicity

Test Substance	Alcohols, C7-9 branched
CAS No.	68526-83-0
Method/Guideline	OECD 414
Type of Study	Developmental Toxicity
GLP	Yes
Year	1994
Species/strain	Rat/Sprague-Dawley
Sex	Females
No. of animals/dose	25/dose
Route of administration	Oral gavage
Exposure period	GD 6-15
Dose/Concentration Levels	100, 500, and 1000 mg/kg/day
Control group and treatment	Carrier only - corn oil
Statistical methods	Nested analysis of covariance, Least Significant Difference (LSD), Chi-square, Fisher Exact test, Armitage's test.
Remarks on Test Conditions	Mated females were assigned to dose groups of 100, 500, and 1000 mg/kg/day or to a corn oil-only group (25/dose). The test substance was administered in volumes of 5 ml/kg. Body weight and food consumption measurements were made on GD 0, 6, 9, 12, 15, 18, and 21. The animals were examined for viability twice daily during the treatment period and once daily thereafter. Clinical observations were made daily during gestation. On GD 21, animals were sacrificed and cesarean sections and necropsies were performed. Uterine weights with ovaries attached were recorded, uterine contents were examined, and implantation data were recorded. All live fetuses were weighed, sexed externally, and examined externally for gross malformations. Approximately one-half of the fetuses were prepared for examination of abnormalities in the head and the other half were preserved for examination of skeletal abnormalities.
Results	Maternal NOAEL = 500 mg/kg/day Fetal NOAEL = 1000 mg/kg/day
Remarks	One animal in the high dose group was euthanized in moribund condition on GD 9. The animal had extreme abdominal staining just prior to death, but there were no significant findings at postmortem examination and the cause of morbidity was therefore not established. Adverse clinical signs were observed in 8 of the 24 dams in the high dose group. These signs included emaciation, decreased food consumption, abdominal/anogenital staining, rales, hypoactivity, and little or no stool. The symptoms were transient and generally were not observed following cessation of dosing. The remaining dams in the high dose group had incidental findings such as alopecia, but otherwise appeared normal throughout the study. There were no observable abnormalities in dams of the middle and low dose groups throughout the gestational period. In the high dose group, statistically significant decreased body weight gain and food consumption were observed from GD 6-9 and GD6-15 compared to controls. However, these effects subsided after cessation of treatment and body weight and food consumption for the overall gestational period (GD 6-21) were not significantly different between the high dose group and controls. There were no maternal findings at necropsy that were judged to be the result of treatment with Alcohols, C7-9 branched. For the most part, uterine implantation parameters were equivalent between the treated and control groups.

Remarks, cont'd	There were slight differences between the high dose group and the control group in the number of post-implantation losses and resorptions, however these differences were not statistically significant and were deemed to be due to the poor health of the dams. Mean fetal body weight was equivalent between treated and control fetuses of both sexes. Three low dose, two mid dose, and one high dose fetus were stunted. There were no statistically significant differences in mean skeletal ossification sites and in total or individual external, visceral, or skeletal malformations between control and treated groups. There were statistically significant increases in total fetuses with skeletal variations and in the incidence of hypoplastic skull bones in the high dose group when compared to controls. These findings were slightly higher than the historical control range of the lab and were not observed with litter-based analysis. Statistically significant increases in the number of lumbar ribs were observed in the middle and high dose groups. However, due to the lack of embryotoxicity observed in this study, these findings were attributed to maternal toxicity observed during treatment.
Conclusions	Under the conditions of this study, Alcohols, C7-9 branched induces maternal toxicity at concentrations that are not embryotoxic.
Data Quality	1 - Reliable without restrictions
Reference	Exxon Biomedical Sciences, Inc. (1994). Developmental Toxicity Study in Rats, Unpublished report.
Date last changed	February, 2001

Acute Toxicity

Test Substance	Alkenes, C7-9, C8 rich
CAS No.	68526-54-5
Method/Guideline	NA
Type of Study	Oral LD_{50}
GLP	Pre-GLP
Year	1975
Species/strain	Albino Rats
Sex	Male
No. of animals/sex/dose	10 rats
Route of administration	Oral gavage
Vehicle	NA
Frequency of Treatment:	Single Treatment
Dose/Concentration Levels:	5000 mg/kg
Control group and Treatment:	NA
Remarks on Test Conditions	A single dose of undiluted test material (5,000 mg/kg) was administered to male rats (not fasted). Individual body weights were recorded on Day 0 and Day 7. Gross necropsy examinations were performed on all animals that died or were killed.
Results (LD_{50} or LC_{50}):	LD_{50} > 5000 mg/kg
Remarks	Hypoactivity and diarrhea were noted within 6-22 hours post-oral administration and subsided by the second post-oral exposure day. There were no significant findings observed during the gross necropsy examination.
Conclusions	Under the conditions of this study, Alkenes, C7-9, C8 rich have a low order of acute oral toxicity.
Data Quality	1 - Reliable without restrictions, comparable to a guideline study
Reference	Exxon Research and Engineering Company (1975). Chemical Hazard Data Sheet on Octenes and Acute Oral Toxicity Study, Acute Dermal Toxicity Study, Eye Irritation Toxicity Test and Acute Vapor Inhalation Toxicity Study. Unpublished Report.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C7-9, C8 rich
CAS No.	68526-54-5
Method/Guideline	NA
Type of Study	Dermal LD_{50}
GLP	Pre-GLP
Year	1975
Species/strain	Albino rabbits
Sex	Males and Females
No. of animals/sex/dose	2/sex/dose
Route of administration	Dermal
Vehicle	NA
Frequency of Treatment:	Single 24-hour exposure
Dose/Concentration Levels:	200, 3160 mg/kg.
Control group and Treatment:	NA
Remarks on Test Conditions	A single dermal application of the test material was made to four groups of four rabbits at doses of 200 and 3,160 mg/kg. The test material was applied to abraded skin. Individual body weights were recorded on Days 0, 7 and 14. Gross necropsies were performed at the end of the experiment.
Results (LD_{50} or LC_{50}):	LD_{50} > 3,160 mg/kg
Remarks	There were no mortalities at any dosage level tested. Thus, the LD_{50} in albino rabbits is greater than the highest dose tested. Signs of erythema, mild to moderate edema and second degree burns were observed at 24 hours at both doses. At 7 and 14 days, focal escharosis was observed at the low dose. At the high dose, escharosis, fissuring, hemorrhaging, and wrinkling were observed at 7 days and escharosis was observed at 14 days. Necropsy examination revealed emaciation and depletion of fat stores in one male rabbit in the low dose group. No other gross pathologic alterations were observed.
Conclusions	Alkenes, C8-10, C9 rich have a low order of acute dermal toxicity.
Data Quality	1 - Reliable without restrictions
Reference	Exxon Research and Engineering Company (1975). Chemical Hazard Data Sheet on Octenes and Acute Oral Toxicity Study, Acute Dermal Toxicity Study, Eye Irritation Toxicity Test and Acute Vapor Inhalation Toxicity Study. Unpublished Report.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C7-9, C8 rich
CAS No.	68526-54-5
Method/Guideline	NA
Type of Study	Inhalation LC_{50}
GLP	Pre-GLP
Year	1977
Species/strain	Albino rats, mice, and guinea pigs
Sex	Males
No. of animals/sex/dose	10/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment:	Single 6-hour Exposure
Dose/Concentration Levels:	31.67 mg/L
Control group and Treatment:	Control animals were exposed to clean air at the same flow rate as the treated group.
Remarks on Test Conditions	Rats, mice, and guinea pigs received a single, 6-hour exposure to the test material. The exposure was conducted in a 1000-liter glass and stainless steel chamber. The compound was placed in a 2000 ml three-necked flask, pre-weighed and mounted outside the chamber. Air was bubbled through the test material at 5 L/min and was then combined with an additional airflow of 10 L/min to produce a total flow rate through the chamber of 15 L/min. All animals were observed for signs of toxicity, abnormal behavior, and mortality during the exposure period and for 14 days after the exposure. Necropsies were performed on all surviving animals and any animals that died during the exposure or post-exposure observation period.
Results (LD_{50} or LC_{50}):	**LC_{50} > 31.7 mg/L (rat)** **LC_{50} > 31.7 mg/L (mouse)** **LC_{50} < 31.7 mg/L (guinea pig)**
Remarks	There were no deaths in the air-exposed animals. In the treated animals, six guinea pigs and three rats died during the exposure period. No mice died during the study. One guinea pig died on Day 1 of the recovery period. All animals showed compound awareness 1 minute after exposure began and became increasingly agitated during the first 35 minutes of exposure. After 100 minutes, some animals were experiencing tremors and convulsions. Necropsy examination indicated dark red coloration of the lungs of 15 animals (3 rats, 4 mice, and 8 guinea pigs). Six guinea pigs had liver discolorations. Five guinea pigs showed pale kidney color also. One guinea pig that died showed a large amount of blood in the heart. Fifteen animals (7 rats, 6 mice, and 2 guinea pigs) showed no gross lesions.
Conclusions	Under conditions of this study, Alkenes, C7-9, C8 rich have a low order of acute inhalation toxicity in rats.
Data Quality	1 - Valid without restrictions; Comparable to a guideline study.
Reference	Exxon Corporation (1977). Acute Inhalation Toxicity- Rats, mice and guinea pigs. Unpublished Report.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alcohols, C8-10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline	NA
Type of Study	Acute oral toxicity
GLP	Pre-GLP
Year	1968
Species/strain	Rats/Sprague-Dawley
Sex	Males
No. of animals/sex/dose	5/dose
Route of administration	Gastric Intubation
Vehicle	None
Frequency of Treatment	Single Exposure
Dose/Concentration Levels	34.6, 120, 417, 1450, 5000 or 10,000 mg/kg
Control group and Treatment	None
Remarks on Test Conditions	After a three to four hour fasting period, groups of 5 rats (approximately 252-295 grams) received the undiluted test material at doses of 34.6, 120, 417, 1450, 5000 or 10,000 mg/kg body weight. Observations were recorded immediately after dosing; at one, four and 24 hours; and once daily for a total of 14 days.
Results	LD_{50} = 2979 mg/kg
Remarks	No deaths occurred in the 34.6, 120, 417, and 1450 mg/kg groups throughout the study. Two of the five animals in the 5000 mg/kg group died within 24 hours and all of the animals in the 10,000 mg/kg group died within 24 hours. Depression, labored respiration and evidence of excessive urination and/or diarrhea were observed at the 5,000 and 10,000 mg/kg dose levels. These signs of toxicity were observed within one hour of administration. At necropsy, abscessed lungs, dark red lungs and a dark zone between the renal cortex and medulla were observed in animals from the 5,000 and 10,000 mg/kg dose levels.
Conclusions	Under conditions of this study, Alcohols, C8-10 iso, C9 rich have a low order of acute oral toxicity in rats.
Data Quality	2 - Valid with restrictions (Pre-GLP)
Reference	Esso Research and Engineering (1968). Unpublished report.
Date last changed	September, 2000

Acute Toxicity

Test Substance	Alcohols, C8-10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline	Other
Type of Study	Acute dermal toxicity
GLP	Pre-GLP
Year	1968
Species/strain	Rabbits/New Zealand White
Sex	Males and Females
No. of animals/sex/dose	2/sex/dose
Route of administration	Dermal
Frequency of Treatment	Single Exposure
Dose/Concentration Levels	50, 200, 794 and 3,160 mg/kg
Remarks on Test Conditions	A single application of the test material was made to four groups of four rabbits (2.0 to 2.8 kg) at doses of 50, 200, 794 and 3160 mg/kg. The material was applied to abraded abdominal skin under occlusive dressing. Observations were recorded immediately following application; at one, four and 24 hours; and once daily thereafter for a total of 14 days.
Results	LD_{50} > 3,160 mg/kg of body weight.
Remarks	No deaths were observed at any timepoint in this study. No evidence of systemic toxicity was observed. Dose-related moderate to severe skin irritation was produced. For all of the doses tested, no compound-related alterations were observed at necropsy.
Conclusions	Under the conditions of this study, Alcohols, C8-10 iso, C9 rich has a low order of acute dermal toxicity in rats.
Data Quality	2 - Valid with restrictions (Pre-GLP)
Reference	Esso Research and Engineering (1968). Unpublished report.
Date last changed	September, 2000

Repeat Dose Toxicity

Test Substance	Isononanol
CAS No.	--
Method/Guideline	Other
Type of Study	14-day repeated dose
GLP	Not specified
Year	1983
Species/strain	Rats /Wistar
Sex	Male
No. of animals/sex/dose	5/treatment, 10/control; 1mmol/kg/day of isononanol (144 mg/kg/day)
Route of administration	Oral gavage.
Frequency of treatment	Once daily for 14 days
Vehicle	Polyethylene glycol 300
Statistical methods	Mean values compared to controls by Student's t-test.
Remarks on Test Conditions	After acclimation for 1 week, five animals received 1mmol/kg/day (130 mg/kg/day) of the test substance by oral gavage and ten animals received only the vehicle, PEG 300, daily for 14 days. Animals were sacrificed after 14 days by halothane overdose and blood was withdrawn by cardiac puncture and analyzed for plasma cholesterol and triglycerides. The liver was removed for histopathological analysis, analysis of catalase, and CN-insensitive palmitoyl CoA oxidation. Testicular weight was also determined.
Results	NOAEL ≥ 144 mg/kg/day
Remarks	Isononanol did not significantly change body weight gain, liver to body weight ratio, or testis to body weight ratio when compared to vehicle controls. Isononanol did not induce any changes in glycogen vacuolation or fat vacuolation. The levels of cholesterol and triglyceride were not significantly different between animals treated with isononanol and vehicle controls. There was a slight induction of palmitoyl CoA oxidase activity. However, the activity of other peroxisome-associated enzymes was not affected and overall peroxisome number was not effected. No hyperlipidemia was observed.
Conclusions	Under the conditions of this study, isononanol has a low order of sub-acute toxicity in male rats for the endpoints studied.
Data Quality	2 - Valid with restrictions. Not a guideline study.
Reference	C. Rhodes, T. Soames, M.D. Stonard, M.G. Simpson, A.J. Vernall, C.R. Elcombe, "The absence of testicular atrophy and in vivo and in vitro effects on hepatocyte morphology and peroxisomal enzyme activities in male rats following the administration of several alkanols," (1984). Toxicology Letters **21**: 103-109.
Date last changed	13-Sep-00

Developmental Toxicity

Test Substance	Isononylalcohol 1
CAS No.	68515-81-1
Method/Guideline	OECD 414
Type of Study	Developmental Toxicity
GLP	Yes
Year	1989
Species/strain	Rats/Wistar
Sex	Females
No. of animals/sex/dose	10/dose
Route of administration	Oral gavage
Vehicle	Aqueous emulsion in 0.005% Cremophor EL
Frequency of Treatment	Gestation days 6-15
Dose/Concentration Levels	144, 720, 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day)
Control group and Treatment	Control Group 1: Doubly distilled water Control Group 2: Doubly distilled water with 0.005% Cremophor EL
Statistical Methods	Dunnett's test, Fisher's exact test
Remarks on Test Conditions	The study was conducted according to OECD 414 guidelines except that 10 animals instead of the recommended 20 per group were employed. Isononylalcohol 1 or Isononylalcohol 2 were administered to rats (10/dose) on days 6 through 15 of gestation at doses of 144, 720, or 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day). A standard dose volume of 5 ml/kg was used. Control group 1 was dosed with doubly distilled water. Control group 2 was dosed with emulsifier (doubly distilled water with 0.005% Cremophor EL). The state of health of the animals was monitored daily and food consumption and body weights of the animals were recorded regularly. Females were sacrificed on gestation day 20. Fetuses were removed and evaluated for sex, weight, and any external, soft tissue, or skeletal findings.
Results	NOAEL = 144 mg/kg/day (Maternal and Fetal)
Remarks	At the lowest dose level, no maternal toxicity was observed. There were an increased number of fetuses with hydroureter. However, the significance of this endpoint as an indicator of marginal developmental toxicity is questionable. At both the 144 and 720 mg/kg/day dose levels, there were no effects on the following parameters: uterine weight, conception rate, mean number of corpora lutea and implantation sites, pre- and post-implantation loss, number of resorptions, and viable fetuses. At the 720 mg/kg/day level, the following signs of maternal toxicity were observed - reduced food consumption, reduced body weight, unsteady gait, and reddish nasal discharge. Fetal effects included a slightly reduced mean fetal body weight and an increased number of fetuses with hydroureter. Signs of maternal toxicity at the 1440 mg/kg/day level included reduced rood consumption and mean body weight, severe clinical symptoms like abdominal or lateral position, and unsteady gait. In addition, 7 of the animals found dead by gestation day 11 and the remaining 3 were sacrificed in moribund condition by gestation day 10. At necropsy, all animals had light brown-gray discoloration of the liver and some had evidence of lung edema and petechiae in the lungs. Because of the death of all dams within the high dose group, no data were available to assess uterus weight, reproduction parameters, or fetal effects.

Conclusions	When administered by oral gavage under the conditions of this study, Isononylalcohol 1 causes embryo/fetal toxicity at doses that induce overt maternal toxicity. In addition, Isononylalcohol 1 does not alter reproductive parameters at doses that are not maternally toxic.
Data Quality	2 - Reliable with restrictions - Only 10 animals instead of the recommended 20 per group (OECD 414) were employed.
Reference	Report: Study of the Prenatal Toxicity of Isononylalcohol 1 and Isononylalcohol 2 in Rats After Oral Administration (Gavage); EPA OTS Doc #: 89-910000247.
Date last changed	February, 2001

Developmental Toxicity

Test Substance	Isononylalcohol 2
CAS No.	68515-81-1
Method/Guideline	OECD 414
Type of Study	Developmental Toxicity
GLP	Yes
Year	1989
Species/strain	Rats/Wistar
Sex	Females
No. of animals	10/group
Route of administration	Oral gavage
Frequency of Treatment	Gestation days 6-15
Dose/Concentration Levels	144, 720, 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day)
Control Group and Treatment	Control Group 1: Doubly distilled water Control Group 2: Doubly distilled water with 0.005% Cremophor EL
Statistical methods	Dunnett's test, Fisher's exact test
Remarks on Test Conditions	The study was conducted according to OECD 414 guidelines except that 10 animals instead of the recommended 20 per group were employed. Isononylalcohol 1 or Isononylalcohol 2 were administered to rats (10/dose) on days 6 through 15 of gestation at doses of 144, 720, or 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day). A standard dose volume of 5 ml/kg was used. Control group 1 was dosed with doubly distilled water. Control group 2 was dosed with emulsifier (doubly distilled water with 0.005% Cremophor EL). The state of health of the animals was monitored daily and food consumption and body weights of the animals were recorded regularly. Females were sacrificed on gestation day 20. Fetuses were removed and evaluated for sex, weight, and any external, soft tissue, or skeletal findings.
Results	NOAEL = 144 mg/kg/day
Remarks	At the lowest dose level, no maternal or fetal toxicity was observed. In addition, there were no changes in reproductive parameters. At the 720 mg/kg/day level, signs of maternal toxicity included unsteady gait, piloerection, salivation, and reduced body weight gain and food consumption. There was also an increased frequency of fetuses with hydroureter at this level. At this level, there were no significant changes in reproductive parameters. Although there was an increased number of late resorptions, this number was within the range of biologic variation, was not dose-dependent, and was therefore considered incidental. At the highest dose level, dams exhibited marked decreases in weight gain and food consumption, and displayed severe clinical symptoms, including unsteady gait, apathy, and abdominal or lateral position. One animal was found dead on gestation day 9 and two other dams were sacrificed in moribund condition on gestation days 8 and 109. At necropsy, light brown-gray discoloration of the liver, lung edema, and petechiae in the lungs, heart, or bladder were observed. Fetuses from the high dose group had markedly reduced mean fetal body weight, increased frequency of hydroureter, and a higher frequency of fetuses with skeletal variations and retardations. At the highest dose, there were no changes in fertility parameters.

Conclusions	When administered by oral gavage under the conditions of this study, Isononylalcohol 2 causes embryo/fetal toxicity at doses that induce overt maternal toxicity. In addition, Isononyl alcohol 2 does not alter fertility parameters at doses that are not maternally toxic.
Data Quality	2 - Reliable with restrictions - Only 10 animals instead of the recommended 20 per group (OECD 414) were employed.
Reference	Report: Study of the Prenatal Toxicity of Isononylalcohol 1 and Isononylalcohol 2 in Rats After Oral Administration (Gavage); EPA OTS Doc #: 89-910000247.
Date last changed	February, 2001

Developmental Toxicity

Test Substance	1-Nonanol
CAS No.	--
Method/Guideline	Other
Type of Study	Developmental Toxicity
GLP	Not specified
Year	1989
Species/strain	Rats/Sprague-Dawley
Sex	Pregnant females
No. of animals/sex/dose	15 dams/dose
Route of administration	Inhalation
Frequency of treatment	7 hrs/day; Gestation days 1-19
Dose/Concentration Levels	150 mg/m^3 (Saturated vapors)
Control group and treatment	15 sham-exposed rats
Statistical methods	MANOVA, ANOVA, Kruskal-Wallis test
Remarks on Test Conditions	Throughout the study, all animals were housed under standard environmental conditions and allowed free access to food and water except when the pregnant females were in the exposure chamber. Following mating, sperm-positive females were placed in cages and weighed. Dams were weighed daily for the first week of exposure and weekly thereafter. Exposures were conducted in Hinners-type chambers. The purity of the test substance was ≥ 99% as measured by gas chromatography. A constant flow of the test substance was mixed with a known volume of heated compressed air, resulting in instantaneous vaporization of the test substance, which then flowed into the chamber. The concentration of the test substance was monitored continuously and recorded every hour. Calibration checks were completed daily. Exposure concentrations were verified on a weekly basis using a secondary method of analysis. The highest concentration of vapor that could be generated was 3500 mg/m^3. Dams were exposed from days 1-19 of gestation. On day 20, dams were sacrificed by CO_2 asphyxiation, and the uterus and ovaries were removed and examined for corpa lutea, implantations, resorption sites, and live fetuses. Fetuses were removed and examined for external malformations, sexed, weighed, and examined for visceral or skeletal defects.
Results	NOAEL = 150 mg/m^3
Remarks	No treatment-related effects were observed in dams. There were no statistically significant differences in maternal weight gain, feed consumption, and water intake between the control and treated groups. In addition, no signs of fetal toxicity were observed. There were no statistically significant differences between the mean number of corpora lutea and resorptions, the sex ratio, and the mean fetal weights between the control and treated groups.

Conclusions	Under the conditions of this study, exposure of pregnant rats to saturated vapors of 1-Nonanol does not induce maternal or fetal toxicity.
Data Quality	2 - Reliable with restrictions - Similar to guideline study; only one exposure level.
Reference	B.K. Nelson, W.W. Brightwell, A. Khan, E.F. Krieg, Jr., A.M. Hoberman, "Developmental toxicology assessment of 1-Octanol, 1-Nonanol, and 1-Decanol administered by inhalation to rats." (1990) Journal of the American College of Toxicology **9(1)**: 93-97. NIOSH, Division of biomedical and behavioral sciences
Date last changed	February, 2001

Acute Toxicity

Test Substance	C_9HOF
CAS No.	
Method/Guideline	Other
Type of Study	Acute Oral
GLP	Yes
Year	1985
Species/strain	Rats
Sex	M/F
No. of animals/sex/dose	5/sex/dose
Route of administration	Oral
Vehicle	NA
Dose/Concentration Levels	5000 mg/kg
Remarks on Test Conditions	Animals were fasted approximately 18 hours prior to administration of the test material. Undiluted test material was administered by oral intubation. The dose administered was calculated by dividing the dose level by the density to arrive at the dose volume. The animal's body weight was then multiplied by the dose volume to arrive at the animal's actual dose. Animals were examined for viability as well as the nature, onset, severity, and duration of toxicological signs at 1,2,4, and 6 hours after dosing, and once per day thereafter for a total of 14 days. Body weights were recorded the day prior to dosing, on Day 0 and Days 7 and 14. On day 14, animals were weighed and sacrificed. Gross necropsies were performed on all animals by qualified personnel.
Results	LD_{50} > 5000 mg/kg
Remarks	All animals survived to study termination. The animals displayed an increase in body weight over the study period. In-life observations were minimal and included staining of the anogenital area in some animals. Nine of the ten animals exhibited no observable abnormalities through the second week of the study. Upon postmortem examination, slightly discolored lungs, maloccluded incisors, slight alopiecia, and red staining around the eye were observed in two of the animals. Eight of the ten test animals exhibited no observable abnormalities at necropsy.
Conclusions	Under the conditions of this study, C_9HOF has a low order of acute oral toxicity.
Data Quality	1 - Reliable without restrictions
Reference	"Acute oral toxicity study in the rat," (1985) performed by Bio/dynamics Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 2001

Acute Toxicity

Test Substance	C_9HOF
CAS No.	
Method/Guideline	Other
Type of Study	Acute Dermal
GLP	Yes
Year	1985
Species/strain	Rabbit
Sex	M/F
No. of animals/sex/dose	3/sex/dose
Route of administration	Dermal
Vehicle	NA
Dose/Concentration Levels	3160 mg/kg
Remarks on Test Conditions	Test material was applied as a single dose to the clipped backs of rabbits. The test material remained in contact with the intact skin of all animals for a period of 24 hours. The test material was covered with a gauze patch and secured with tape. To prevent evaporation or ingestion of the test material, the gauze patch was secured to the trunk of the animal with tape and a plastic sleeve. The amount of material remaining on the skin of each animal after the 24 hour exposure was estimated. Animals were observed for clinical signs 2 and 4 hours after dosing and once per day thereafter for a total of 14 days. Dermal responses were evaluated 24 hours after topical application and on 3, 7, 10, and 14 days according to the Draize method of scoring. Body weights were recorded on the day of dosing, and Days 7 and 14. After the two weeks, all animals were sacrificed and gross necropsies were performed.
Results	LD_{50} > 3160 mg/kg
Remarks	There were no deaths prior to study termination. At study termination, all animals displayed an increase in body weight over their initial body weights. Clinical in-life observations were minimal and included nasal discharge, abdominal staining, staining in the anogenital area, thin hair coat, soft stool, and alopecia. Gross necropsy revealed single incidences of anogenital staining, thin hair coat, and alopecia. Three of the six test animals exhibited no observable abnormalities. Dermal observations included well-defined to moderate-to-severe erythema and slight edema at 72 hours. However, irritation decreased by Day 14 and only slight erythema and edema were observed in one animal by Day 14. The remaining animals showed no signs of irritation by Day 14.
Conclusions	Under the conditions of this study, C_9HOF has a low order of acute toxicity by the dermal route of exposure.
Data Quality	1 - Reliable without restrictions.
Reference	"Acute dermal toxicity study in the rabbit," (1985) Bio/dynamics, Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 2001

Acute Toxicity

Test Substance	Alkenes, C8-10, C9 rich
CAS No.	68526-55-6
Method/Guideline	NA
Type of Study	Oral LD_{50}
GLP	Pre-GLP
Year	1957
Species/strain	Rats/Holtzman
Sex	Male
No. of animals/sex/dose	5/dose
Route of administration	Oral gavage
Vehicle	0.5% aqueous methyl cellulose solution
Frequency of Treatment:	Single Treatment
Dose/Concentration Levels:	0.1, 1.0, and 10.0% volume/volume in a 0.5% aqueous methyl cellulose solution. (Equivalent to 7.4, 23.3, 73.8, 233, 738, 2332 mg/kg)
Control group and Treatment:	For comparison, untreated animals were necropsied at the end of the study.
Remarks on Test Conditions	Prior to dosage, food was withheld from the animals for three hours. Following exposure, food and water were available at all times. The animals were observed for gross effects and mortality several times on the day of exposure and once daily thereafter for 7 days. Gross necropsies were performed at the end of the observation period.
Results (LD_{50} or LC_{50}):	LD_{50} > 2332 mg/kg
Remarks	No mortalities were observed at any of the doses tested. Animals in the high dose group appeared slightly depressed the day after administration of the test material. For several hours following exposure, the animals in the high dose group also showed slight nasal discharge. Otherwise, all animals appeared normal throughout the study. Animals in all groups exhibited normal weight gain. Gross necropsy did not reveal any abnormalities other than slightly congested adrenal glands in animals from the three higher dose levels (233, 738, and 2332 mgl/kg).
Conclusions	Under the conditions of this study, Alkenes, C8-10, C9 rich have a low order of toxicity.
Data Quality	2 - Reliable with restrictions, comparable to a guideline study (pre-GLP).
Reference	Hazleton Laboratories for Esso Research and Engineering Co., Acute Oral Administration, 1957.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C8-10, C9 rich
CAS No.	68526-55-6
Method/Guideline	NA
Type of Study	Dermal LD_{50}
GLP	Pre-GLP
Year	1957
Species/strain	Albino rabbits
Sex	Males
No. of animals/sex/dose	4/dose
Route of administration	Dermal
Vehicle	NA
Frequency of Treatment:	Single 24-hour exposure
Dose/Concentration Levels:	73.8, 233, 738, 2332 mg/kg.
Control group and Treatment:	NA
Remarks on Test Conditions	Undiluted test material was applied to clipped, intact abdominal skin under rubber dental damming. The trunks of the animals were wrapped securely with adhesive binder to prevent ingestion of the test substance. Following the 24-hour exposure period, the binder was removed and the exposed area was sponged with warm water to remove residue. Animals were observed for gross signs of irritation and systemic toxicity daily for 7 days. Following the post-exposure observation period, animals were weighed, sacrificed and necropsied. Throughout the study, food and water were available at all times and animals were housed individually.
Results (LD_{50} or LC_{50}):	**LD_{50} > 2332 mg/kg**
Remarks	No mortalities were observed at any dose tested. The abdomens and binders were dry at the end of the exposure period, indicating a good rate of dermal absorption of the applied material. The test material produced mild dermal irritation characterized by mild erythema. Most of the animals showed slight atonia for several days of the observation period and desquamation during the final two days of the observation period. Throughout the study, all animals exhibited normal appearance and behavior. Body weight gain was normal throughout the study. There were no significant findings at necropsy.
Conclusions	Alkenes, C8-10, C9 rich have a low order of acute dermal toxicity.
Data Quality	2 - Reliable with restrictions. Pre-GLP.
Reference	Hazleton Laboratories for Esso Research and Engineering Co., Acute Dermal Application, 1957.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C8-10, C9 rich
CAS No.	68526-55-6
Method/Guideline	Other
Type of Study	Inhalation LC_{50}
GLP	Not specified
Year	1977
Species/strain	CD-1 Mice, Sprague-Dawley Rats, Hartley Guinea Pigs
Sex	Males and Females
No. of animals/sex/dose	5/sex/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment:	Single Dose
Dose/Concentration Levels:	11.1 mg/L for 6 hours
Control group and Treatment:	Control animals (5/sex/species) were exposed to clean air at the same flow rate as the treated group.
Remarks on Test Conditions	An airstream was bubbled through the test material at a rate of 33.1 L/min and passed through a 760 L test chamber containing the test animals for a total of 6 hours. Animals were observed throughout the exposure period for signs of toxicity. Following the exposure period, animals were observed for signs of toxicity daily for 14 days. Body weights were recorded on Days 0, 1, 2, 4, 7, and 14. Gross necropsies were performed on any animals that died during the study and all animals at the completion of the study.
Results (LD_{50} or LC_{50}):	**LC_{50} > 11.1 mg/L for 6 hours**
Remarks	None of the animals died during the exposure period or during the 14-day post-exposure observation period. A total of 132.1 g of test material was delivered to the chamber during the course of the exposure. The overall nominal concentration of the test substance was 11.1 mg/L. During the last 4 hours of exposure, mice exhibited labored breathing patterns, rats exhibited limb ataxia and generally lethargic behavior, and the guinea pigs showed slight tremors. No similar signs were noted in the control animals, indicating that these effects were due to exposure to the test substance. However, all of the symptoms subsided as the test chamber was cleared with clean air. On day 4 of the post-exposure observation period, one of the exposed mice had tremors, but the symptoms only occurred on that day and were not believed to be due to exposure to the test substance. Signs of toxicity observed during the 14-day post-exposure period included dry rales, soft stool, and nasal discharge in rats, however, these signs were observed in both the exposed and control animals and are not believed to be due to the test substance. In both exposed animals and controls, there was a slight decrease in body weight during the first few days following exposure, after which the animals recovered their normal body weight. There were no significant differences observed between the exposed animals and the test animals at necropsy. Although there was a high incidence of kidney lesions in both groups of guinea pigs, the rate was slightly higher in the exposed animals than in the controls. However, the difference was not statistically significant.
Conclusions	Under conditions of this study, Alkenes, C8-10, C9 rich have a low order of acute inhalation toxicity in rats.
Data Quality	2 - Valid with restrictions. No analysis of exposure atmosphere.
Reference	"An Acute Inhalation Toxicity Study of MRD-76-57 in the Mouse, Rat, and Guinea Pig," Bio/dynamics, Inc. for Exxon Research and Engineering Company, April 11, 1977.
Date last changed	October, 2000

Genetic Toxicity

Test Substance	Alkenes, C8-10, C9 rich
CAS No.	68526-55-6
Method	EPA OTS 798.5395
Type of Study	Mouse Micronucleus
GLP	Yes
Year	1991
Species/Strain	Mouse/ B6C3F1
Sex	Male and Female
Number/sex/dose	15/sex
Route of administration	Oral gavage
Vehicle	NA
Exposure Period	Single dose
Concentrations	1.25, 2.5, and 5 g/kg. Concentrations were based on the results of a range-finding study.
Controls	Positive: Cyclophosphamide (40 mg/kg) Negative: Corn oil
Statistical Methods	Analysis of variance (ANOVA), Duncan's Multiple Range Test
Remarks on Test Conditions	The test material and the carrier were administered by oral gavage as a single dose to mice (not fasted). The positive control, cyclophosphamide, was administered by intraperitoneal injection as a single dose. Animals from the appropriate groups were sacrificed by carbon dioxide asphyxiation at appropriately 24, 48 and 72 hours after dose administration. Animals dosed with cyclophosphamide were sacrificed at 24 hours only. Immediately upon sacrifice, the bone marrow was removed from both femurs of each animal, resuspended, and prepared for microscopy. Samples were blindly coded and stained with acridine orange.
Results	Negative
Remarks for Results	There was no statistically significant increase in the mean number of micronucleated polychromatic erythrocytes. Thus, the test material was not clastogenic. The positive control induced a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes, which indicates that the positive control is clastogenic. The test material did not induce a statistically significant increase in the mean number of micronucleated polychromatic erythrocytes. However, the test material did induce a significant decrease in polychromatic erythrocytes in both males and females at 48 and 72 hours when treated with the high dose. In addition, there was a statistically significant difference in the mean percent of polychromatic erythrocytes in the high dose group at 48 and 72 hours and in the mid dose group at 48 hours. These observations indicate that the test material was toxic to mouse bone marrow at higher concentrations, but did not induce micronuclei formation.
Conclusions	Under conditions of this assay, the test material is not considered clastogenic in mice up to and including 5.0 g/kg when evaluated up to 72 hours after dose administration.
Data Quality	1 - Reliable without restrictions
Reference	"In vivo mammalian bone marrow micronucleus assay: oral gavage method," Exxon Biomedical Sciences, Inc. 1991.
Date last changed	October, 2000

Genetic Toxicity

Test Substance **CAS No.**	Alkenes, C8-10, C9 rich 68526-55-6
Method/Guideline **Test Type** **GLP** **Year**	EPA OTS 798.5265 Ames Assay Yes 1991
Species/strain	Salmonella typhimurium; TA98; TA100; TA1535; TA1537; TA1538
Metabolic Activation	With and without S9 fraction of livers from rats pretreated with Aroclor 1254.
Dose/Conc. Levels	10, 32, 100, 320, and 1000 μg/plate
Statistical methods	The mean plate count and standard deviation for each dose point were determined. Any test value that was equal to or greater than three times the mean value of the concurrent vehicle control was considered to be a positive dose.
Remarks on Test Conditions	
Solvent:	DMSO was used for controls; Ethanol was used for the test material
Positive Controls:	2-Aminoanthracene, 9-Aminoacridine, 2-Nitrofluorene, N-methyl-N-nitro-N-nitrosoguanidine
Negative Controls:	Vehicle controls were dosed at 0.1 ml/plate ethanol and 0.1 ml/plate DMSO
	To determine the highest dose of compound to be used in the assay, a dose range from 1 to 10,000 μg/plate was tested. Only strain TA98 was used. The toxicity pretest was repeated and toxicity was observed as a reduction in both background and revertant colony counts. 1000 μg/plate was selected as the high dose to be used on the mutagenesis assay for both the saline (-S9) and the +S9 treated plates.
	A repeat assay was performed in order to verify the data produced in the initial assay.
Results	Negative
Remarks	The test material did not produce any evidence of mutagenicity. Doses were considered positive if test values were equal to or greater than 3X the mean value of the vehicle control. In the initial and repeat assays, neither a positive response nor a dose related increase in revertants was observed for any of the tester strains either in the presence or absence of metabolic activation. All other positive and negative controls responded in a manner consistent with data from previous assays.
Conclusions	Under conditions of this assay, the test material was not mutagenic for the *Salmonella* tester strains at doses up to and including 1000 μg/plate.
Data Quality	1 - Valid without restrictions
Reference:	Microbial Mutagenesis in *Salmonella*: Mammalian Microsome Plate Incorporation Assay; Exxon Biomedical Sciences Inc., 1991.
Date last changed	November, 2000

Acute Toxicity

Test Substance	C_{10}V-HOF
CAS No.	--
Method/Guideline	Other
Type of Study	Acute Oral
GLP	Yes
Year	1985
Species/strain	Rats
Sex	M/F
No. of animals/sex/dose	5/sex/dose
Route of administration	Oral
Vehicle	NA
Dose/Concentration Levels:	5000 mg/kg
Remarks on Test Conditions	Animals were fasted approximately 18 hours prior to administration of the test material. Undiluted test material was administered by oral intubation. The dose administered was calculated by dividing the dose level by the density to arrive at the dose volume. The animal's body weight was then multiplied by the dose volume to arrive at the animal's actual dose. Animals were examined for viability as well as the nature, onset, severity, and duration of toxicological signs at 1,2,4, and 6 hours after dosing, and once per day thereafter for a total of 14 days. Body weights were recorded the day prior to dosing, on Day 0 and Days 7 and 14. On day 14, animals were weighed and sacrificed. Gross necropsies were performed on all animals by qualified personnel.
Results	LD_{50} > 5000 mg/kg
Remarks	All animals survived to study termination. The animals displayed an increase in body weight over the study period. In-life observations were minimal and included staining of the anogenital area and soft stool in some animals. By Day 12, all animals exhibited no observable abnormalities. Gross postmortem examination revealed no observable abnormalities in any animals.
Conclusions	Under the conditions of this study, C_{10}V-HOF has a low order of acute oral toxicity.
Data Quality	1 - Reliable without restrictions.
Reference	"Acute oral toxicity study in the rat," (1985) performed by Bio/dynamics Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 2001

Acute Toxicity

Test Substance	C_{10}U-HOF
CAS No.	--
Method/Guideline	Other
Type of Study	Acute Oral
GLP	Yes
Year	1985
Species/strain	Rats
Sex	M/F
No. of animals/sex/dose	5/sex/dose
Route of administration	Oral
Vehicle	NA
Dose/Concentration Levels:	5000 mg/kg
Remarks on Test Conditions	Animals were fasted approximately 18 hours prior to administration of the test material. Undiluted test material was administered by oral intubation. The dose administered was calculated by dividing the dose level by the density to arrive at the dose volume. The animal's body weight was then multiplied by the dose volume to arrive at the animal's actual dose. Animals were examined for viability as well as the nature, onset, severity, and duration of toxicological signs at 1,2,4, and 6 hours after dosing, and once per day thereafter for a total of 14 days. Body weights were recorded the day prior to dosing, on Day 0 and Days 7 and 14. On day 14, animals were weighed and sacrificed. Gross necropsies were performed on all animals by qualified personnel.
Results	LD_{50} > 5000 mg/kg
Remarks	All animals survived to study termination. The animals displayed an increase in body weight over the study period. In-life observations were minimal and included staining of the anogenital area in some animals. By Day 6, all animals exhibited no observable abnormalities. Gross postmortem examination revealed slight lung discoloration in three animals and no observable abnormalities in the other seven animals.
Conclusions	Under the conditions of this study, C_{10}U-HOF has a low order of acute oral toxicity.
Data Quality	1 - Reliable without restrictions.
Reference	"Acute oral toxicity study in the rat," (1985) performed by Bio/dynamics Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 2001

Acute Toxicity

Test Substance	C_{10}V-HOF
CAS No.	--
Method/Guideline	Other
Type of Study	Acute Dermal
GLP	Yes
Year	1985
Species/strain	Rabbit
Sex	M/F
No. of animals/sex/dose	3/sex/dose
Route of administration	Dermal
Vehicle	NA
Dose/Concentration Levels	3160 mg/kg
Remarks on Test Conditions	Test material was applied as a single dose to the clipped backs of rabbits. The test material remained in contact with the intact skin of all animals for a period of 24 hours. The test material was covered with a gauze patch and secured with tape. To prevent evaporation or ingestion of the test material, the gauze patch was secured to the trunk of the animal with tape and a plastic sleeve. The amount of material remaining on the skin of each animal after the 24 hour exposure was estimated. Animals were observed for clinical signs 2 and 4 hours after dosing and once per day thereafter for a total of 14 days. Dermal responses were evaluated 24 hours after topical application and on 3, 7, 10, and 14 days according to the Draize method of scoring. Body weights were recorded on the day of dosing, and Days 7 and 14. After the two weeks, all animals were sacrificed and gross necropsies were performed.
Results	LD_{50} > 3160 mg/kg
Remarks	There were no deaths prior to study termination. Five of six animals displayed an increase in body weight over their initial values, while the remaining animal displayed a slight loss in body weight. Clinical in-life observations were minimal during the study and included soft stool, nasal discharge, anogenital staining, ocular discharge, and alopecia. Gross necropsy revealed discoloration of the kidneys in one animal, salivary glands abnormalities in one animal, and desquamation in two animals. Three of the six test animals exhibited no observable abnormalities at necropsy. The test material produced some dermal irritation, including desquamation. However, by Day 14, only one animal displayed very slight erythema and edema.
Conclusions	Under the conditions of this study, C_{10}V-HOF has a low order acute toxicity by the dermal route of exposure.
Data Quality	1 - Reliable without restrictions.
Reference	"Acute dermal toxicity study in the rabbit," (1985) Bio/dynamics, Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 01

Acute Toxicity

Test Substance	C_{10}U-HOF
CAS No.	
Method/Guideline	Other
Type of Study	Acute Dermal
GLP	Yes
Year	1985
Species/strain	Rabbit
Sex	M/F
No. of animals/sex/dose	3/sex/dose
Route of administration	Dermal
Vehicle	NA
Dose/Concentration Levels	3160 mg/kg
Remarks on Test Conditions	Test material was applied as a single dose to the clipped backs of rabbits. The test material remained in contact with the intact skin of all animals for a period of 24 hours. The amount of material remaining on the skin of each animal after the 24 hour exposure was estimated. Animals were observed for clinical signs 2 and 4 hours after dosing and once per day thereafter for a total of 14 days. Dermal responses were evaluated 24 hours after topical application and on 3, 7, 10, and 14 days according to the Draize method of scoring. Body weights were recorded on the day of dosing, and Days 7 and 14. After the two weeks, all animals were sacrificed and gross necropsies were performed.
Results	LD_{50} > 3160 mg/kg
Remarks	There were no deaths prior to study termination. All animals displayed an increase in body weight over the course of the study. Clinical in-life observations during the study were minimal. One animal that was observed with its collar in its mouth at three consecutive observations intervals exhibited ataxia, nasal discharge, decreased food consumption, emaciation, staining in the anogenital area, a small amount of stool, alopecia, scabs, and maloccluded incisors. This animal had its collar removed for the remainder of the study. Necropsy revealed maloccluded incisors in 1 animal and 3 animals with alopecia. Three of the 6 test animals exhibited no observable abnormalities. Dermal observations included initial moderate-to-severe erythema that diminished in severity by the end of the observation period. Two animals displayed fissuring and all animals displayed atonia and desquamation.
Conclusions	Under the conditions of this study, C_{10}U-HOF has a low order acute toxicity by the dermal route of exposure.
Data Quality	1 - Reliable without restrictions
Reference	"Acute dermal toxicity study in the rabbit," (1985) Bio/dynamics, Inc. for Exxon Biomedical Sciences Inc.
Date last changed	October, 2001

Acute Toxicity

Test Substance	Alcohols, C9-C11 iso, C10 rich
CAS No.	68526-85-2
Method/Guideline	Other
Type of Study	Acute oral toxicity
GLP	Pre-GLP
Year	1960
Species/strain	Rats/Sprague-Dawley
Sex	Male
No. of animals/sex/dose	5/dose
Route of administration	Oral gavage
Vehicle	Corn oil
Frequency of Treatment	Single Treatment
Dose/Concentration Levels	0.1, 1.0, 10.0, 30.0% volume/volume emulsion in corn oil (Equivalent to 26, 82, 260, 820, 2600, 8200 mg/kg)
Control group and Treatment	For comparison, untreated animals were necropsied at the end of the study.
Remarks on Test Conditions	Prior to dosage, food was withheld from the animals for three to four hours. The animals were observed for gross effects and mortality at one, four, and twenty-four hours, and once daily thereafter up until seven days. Gross necropsies were performed at the end of the observation period and samples of liver, kidney, brain, and blood were taken from untreated control animals and from all surviving animals at the 820 and 2600 mg/kg dose levels.
Results	LD_{50} = 4626 mg/kg
Remarks	5/5 animals died within the first four hours following exposure to 8200 mg/kg. Animals in all other dose groups survived until the end of the study. At the one and four-hour intervals, animals in the 260 and 820 mg/kg dose groups were inactive and displayed labored respiration, ataxia, and sprawling of the limbs. At the 24-hour interval, animals had oily fur. After approximately 48-hours after dosing, most animals in these groups returned to normal appearance and behavior. At the 2600 mg/kg dose level, animals exhibited similar symptoms as above but also showed lacrimation and depressed righting and placement reflexes. Animals in this dose group also returned to normal appearance and behavior after 24 hours. At the highest dose, animals initially exhibited labored respiration, ataxia, and sprawling of the limbs, which was followed by a comatose state and death within 4 hours of exposure. The surviving animals at the five lower dose levels (26, 82, 260, 820, 2600 mg/kg) had weight gain that was within the normal range. Gross autopsies performed on animals that died (5/5 in 8200 mg/kg group) revealed congested lungs, kidneys, and adrenals, and dark-appearing spleens. No abnormalities were observed in the surviving animals at necropsy. Therefore, a histopathologic analysis was not performed.
Conclusions	Under the conditions of this study, Alcohols, C9-C11 iso, C10 rich has a low order of toxicity.
Data Quality	2 - Valid with restrictions (Pre-GLP).
Reference	Esso Research and Engineering (1960). Unpublished report.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alcohols, C9-C11 iso, C10 rich
CAS No.	68526-85-2
Method/Guideline	Other
Type of Study	Acute dermal toxicity
GLP	Pre-GLP
Year	1960
Species/strain	Rabbits/Albino
Sex	Males and Females
No. of animals	2/sex/dose
Route of administration	Dermal
Frequency of Treatment	Single Dose
Dose/Concentration Levels	80, 260, 820, and 2600 mg/kg
Remarks on Test Conditions	A single application of the test material was given to four groups (2/sex/dose) of four rabbits at doses of 80, 260, 820, and 2600 mg/kg. The material was applied under occlusive dressing to intact abdominal skin. Observations were recorded at one, four and 24 hours; and once daily thereafter for a total of 7 days. Samples of liver, kidney, brain and blood were taken from four untreated control albino rabbits and from each surviving animal at the 820 and 2600 mg/kg dose level.
Results	The acute dermal LD50 is > 2600 mg/kg
Remarks	No deaths were observed during this study. Mild to moderate erythema and edema were observed in animals at the three lower dose levels. Marked erythema and edema were observed at the highest dose level. Edema in each animal subsided within 3 days. Erythema in animals at the high dose group diminished in intensity but did not subside completely during the observation period. Autopsies performed following sacrifice revealed no gross pathological findings in any animal. Therefore, a histopathologic analysis was not performed.
Conclusions	Under conditions of this study, Alcohols, C9-C11 iso, C10 rich has a low order of acute dermal toxicity in rats.
Data Quality	2 - Valid with restrictions (Pre-GLP).
Reference	Esso Research and Engineering (1960). Unpublished report.
Date last changed	September, 2000

Developmental Toxicity

Test Substance	Isodecanol
CAS No.	25339-17-7
Method/Guideline	OECD 414
Type of Study	Developmental Toxicity
GLP	Yes
Year	1989
Species/strain	Wistar rats
Sex	Females
No. of animals/sex/dose	10/dose
Route of administration	Oral gavage
Frequency of treatment	Gestation day 6-15
Dose/Concentration Levels	158, 790, 1580 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day)
Statistical methods	Dunnett's test, Fisher's exact test
Remarks on Test Conditions	The study was conducted according to OECD 414 guidelines except that 10 animals instead of the recommended 20 per group were employed. Isodecanol was administered at doses of 158, 790, or 1580 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day). A standard dose volume of 5 ml/kg was used. Control group 1 was dosed with doubly distilled water. Control group 2 was dosed with emulsifier (doubly distilled water with 0.005% Cremophor EL). The state of health of the animals was monitored daily and food consumption and body weights of the animals were recorded regularly. Females were sacrificed on gestation day 20. Fetuses were removed and evaluated for sex, weight, and any external, soft tissue, or skeletal findings.
Results	Maternal NOAEL = 158 mg/kg, Fetal NOAEL = 790 mg/kg
Remarks	At the lowest dose level, no adverse effects were observed in the dams or the fetuses as a result of exposure to the test compound. There were also no differences from controls with respect to the following reproductive parameters: conception rate, mean number of corpora lutea and implantation sites, pre- and post-implantation loss, number of resorptions, number of viable fetuses, placental weight, and sex distribution of the fetuses. Dams of the middle dose group exhibited reduced body weight gain and did not consume as much food as the control animals. Animals in the middle dose group also had an unsteady gait and reddish nasal discharge. No embryo or fetotoxic effects were observed at this dose. In addition, there were no changes in fertility parameters at the middle dose. Treatment with the highest dose of isodecanol resulted in statistically significant decreases in food consumption, body weight, and body weight gain in the dams. Three animals in the high dose group were found dead on gestation days 9 and 10. A fourth dam was sacrificed in moribund condition on gestation day 10. All of the dams in the high dose group had clinical symptoms that included nasal discharge, salivation, and signs of CNS depression.

Results, continued	At necropsy, the liver was light brown-gray and the mean gravid uterus weight was reduced. The lungs displayed signs of edema and emphysema. There were statistically significant increases in the number of resorptions in the high dose group as well as significantly reduced mean fetal body weight. However, there were no other statistically significant changes in reproductive parameters. Two litters had 2 anedeous fetuses. In addition, there were an increased number of fetuses with skeletal retardations.
Conclusions	Isodecanol is embryo and fetotoxic at doses that produce overt toxicity in the dam. In the absence of maternal toxicity, isodecanol is not embryo or fetotoxic under the conditions of this study. Furthermore, isodecanol does not alter fertility parameters at doses that are not maternally toxic.
Data Quality	2 - Reliable with restrictions - Only 10 animals instead of the recommended 20 per group (OECD 414) were employed.
Reference	Report: Study of the Prenatal Toxicity of Isodecanol, 2-Ethylhexanol, and 711 Alcohol (T.C.) in Rats After Oral Administration (Gavage); EPA OTS Doc #: 89-910000245.
Date last changed	October, 2000

Developmental Toxicity

Test Substance	1-Decanol
CAS No.	--
Method/Guideline	Other
Type of Study	Developmental Toxicity
GLP	Not specified
Year	1989
Species/strain	Sprague-Dawley Rats
Sex	Pregnant females
No. of animals/sex/dose	15 dams/treatment
Route of administration	Inhalation
Frequency of treatment	7 hrs/day; Gestation days 1-19
Dose/Concentration Levels	100 mg/m^3 (Saturated vapors)
Control group and treatment	15 sham-exposed rats
Statistical methods	MANOVA, ANOVA, Kruskal-Wallis test
Remarks on Test Conditions	Throughout the study, all animals were housed under standard environmental conditions and allowed free access to food and water except when the pregnant females were in the exposure chamber. Following mating, sperm-positive females were placed in cages and weighed. Dams were weighed daily for the first week of exposure and weekly thereafter. Animals had free access to food and water. Exposures were conducted in Hinners-type chambers. The purity of the test substance was ≥ 99% as measured by gas chromatography. A constant flow of the test substance was mixed with a known volume of heated compressed air, resulting in instantaneous vaporization of the test substance which then flowed into the chamber. The concentration of the test substance was monitored continuously and recorded every hour. Calibration checks were completed daily. Exposure concentrations were verified on a weekly basis using a secondary method of analysis. The highest concentration of vapor that could be generated was 100 mg/m^3. Dams were exposed from days 1-19 of gestation. On day 20, dams were sacrificed by CO_2 asphyxiation, and the uterus and ovaries were removed and examined for corpa lutea, implantations, resorption sites, and live fetuses. Fetuses were removed and examined for external malformations, sexed, weighed, and examined for visceral or skeletal defects.
Results	NOAEL = 100 mg/m^3
Remarks	No treatment-related effects were observed in dams. There were no significant differences in maternal weight gain, feed consumption, and water intake between the control and treated groups. In addition, no signs of fetal toxicity were observed. The number of corpora lutea and resorptions, the sex ratio, and fetal weights were not significantly different between the control and treated groups.

Conclusions	Under the conditions of this study, exposure of pregnant rats to vapors of 1-Decanol does not induce maternal or fetal toxicity.
Data Quality	2 - Reliable with restrictions - Similar to guideline study; only one exposure level.
Reference	B.K. Nelson, W.W. Brightwell, A. Khan, E.F. Krieg, Jr., A.M. Hoberman, "Developmental toxicology assessment of 1-Octanol, 1-Nonanol, and 1-Decanol administered by inhalation to rats." (1990) Journal of the American College of Toxicology **9(1)**: 93-97. NIOSH, Division of Biomedical and Behavioral Sciences
Date last changed	February, 2001

Developmental Toxicity

Test Substance	C7-9-11 Alcohol The test material consists mainly of linear alcohols and also contains significant amounts of alpha-methyl branched alcohols ranging in carbon chain length from C7 to C11.
CAS No.	85566-14-9
Method/Guideline	OECD 414
Type of Study	Developmental Toxicity
GLP	Yes
Year	1989
Species/strain	Rats/Wistar
Sex	Females
No. of animals/sex/dose	10/dose
Route of administration	Oral gavage
Frequency of treatment	Gestation day 6-15
Dose/Concentration Levels	144, 720, 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day)
Statistical methods	Dunnett's test, Fisher's exact test
Remarks on Test Conditions	The study was conducted according to OECD 414 guidelines except that 10 animals instead of the recommended 20 per group were employed. Isodecanol was administered at doses of 144, 720, or 1440 mg/kg/day (equivalent to 1, 5, and 10 mmol/kg/day). A standard dose volume of 5 ml/kg was used. Control group 1 was dosed with doubly distilled water. Control group 2 was dosed with emulsifier (doubly distilled water with 0.005% Cremophor EL). The state of health of the animals was monitored daily and food consumption and body weights of the animals were recorded regularly. Females were sacrificed on gestation day 20. Fetuses were removed and evaluated for sex, weight, and any external, soft tissue, or skeletal findings.
Results	Maternal NOAEL ≥ 1,440 mg/kg/day Fetal NOAEL ≥ 1,440 mg/kg/day
Remarks	No adverse effects were observed at any dose of C7-9-11 Alcohol. This included changes in body weight and food consumption by the dams, reproductive parameters, and signs of fetal toxicity.
Conclusions	C7-9-11 Alcohol does not produce signs of toxicity in the dam or the fetus. C7-9-11 Alcohol is not embryo or fetotoxic under the conditions of this study.
Data Quality	2 - Reliable with restrictions - Only 10 animals instead of the recommended 20 per group (OECD 414) were employed.
Reference	Report: Study of the Prenatal Toxicity of Isodecanol, 2-Ethylhexanol, and 711 Alcohol (T.C.) in Rats After Oral Administration (Gavage); EPA OTS Doc #: 89-910000245.
Date last changed	June, 2001

Acute Toxicity

Test Substance	Alcohols, C11-14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline	OECD 401
Type of Study	Acute oral toxicity
GLP	Yes
Year	1988
Species/strain	Rats/Wistar
Sex	Males and Females
No. of animals/sex/dose	5/sex/dose
Route of administration	Oral Gavage
Vehicle	None
Frequency of Treatment	Single Dose
Dose/Concentration Levels	2000 mg/kg
Control group and Treatment	None
Remarks on Test Conditions	The testing procedure used in this study is in accordance with OECD Guidelines 401. After being fasted for 12 to 18 hours, male and female rats were administered a single oral gavage dose of 2,000 mg/kg of the test article. Observations were made four times on day 1; and daily for 14 days. Animals were necropsied at the termination of the study.
Results	LD_{50} > 2,000 mg/kg.
Remarks	There were no deaths in males or females. Clinical signs of toxicity that were observed included sedation, diarrhea and dyspnea (males). There were no macroscopic changes observed at necropsy.
Conclusions	Under the conditions of this study, Alcohols, C11-14 iso, C13 rich has a low order of acute oral toxicity in rats.
Data Quality	1 - Valid without restrictions
Reference	Research and Consulting Co., (1988). Acute Oral Toxicity Study with Alcohols, C11-14 iso, C13 rich in Rats, Unpublished report.
Date last changed	September, 2000

Genetic Toxicity

Test Substance	1-Dodecanol
CAS No.	112-53-8
Method	Other
Type of Study	Ames Assay
Test system	*S. typhimurium, E. coli*
GLP	Not specified
Year	1985
Species/Strain	*Salmonella typhimurium* /TA98; TA100; TA1535; TA1537; TA1538; *E. coli* WP2uvrA
Metabolic Activation	Yes
Concentrations	0.01, 0.05, 0.1, 0.5, 1, 5, 10, and 50 ug/plate.
Statistical methods	Samples run in duplicate. No further details provided.
Remarks on Test Conditions	1-dodecanol (90% pure) was dissolved in DMSO at appropriate concentrations. 0.1ml of this mixture was added to 0.1 ml of bacteria and 0.5 ml of either S9 mix (polychlorinated biphenyl-induced rat liver S9 mixture) or phosphate-buffered saline. Following a 20-minute pre-incubation, the mixtures were combined with agar and incubated for 48 hours. Colonies were scored with an automatic counter. All tests were performed in duplicate. 2-(2-Furyl)-3-(5-nitro-2-furyl)acrylamide (AF-2), N-ethyl-N'-nitro-N-nitrosoguanidine (ENNG), 9-aminoacridine (9AC), 4-nitroquinoline-1-oxide (4NQO), benzo(a)pyrene (B(a)P), 2-aminoanthracene (2AA), and 2-nitrofluorene (2NF) were used as positive controls. In addition, water and DMSO were used as vehicle controls.
Results	Negative.
Remarks for Results	There was no evidence of mutagenicity of 1-dodecanol in the presence or absence of metabolic activation in all of the strains tested. The number of revertant colonies per plate did not vary significantly between the water, DMSO, or 1-dodecanol samples.
Conclusions	1-Dodecanol was not mutagenic in bacteria under the conditions of this study.
Data Quality	2- Reliable with restrictions (Similar to OECD 471)
Reference	H. Shimizu, Y. Suzuki, N. Takemura, S. Goto, H. Matsushita, (1985) "The Results of Microbial Mutation Test for Forty-Three Industrial Chemicals," *Japanese Journal of Industrial Health*, **27**: 400-419.
Date last changed	October 3, 2000

Repeat Dose Toxicity

Test Substance	Alcohols, C11-14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline	OECD 408
Type of Study	Repeated dose 90-day oral toxicity study
GLP	Yes
Year	1986
Species/strain	Rats/Sprague-Dawley
Sex	Males and Females
No. of animals	20/sex/dose
Route of administration	Oral gavage
Frequency of treatment	Daily, 7 days per week, 14 weeks
Doses	0, 100, 500, and 1000 mg/kg/day
Vehicle	Distilled water
Remarks on Test Conditions	Rats (20/sex/dose) were administered 0, 100, 500, and 1000 mg/kg/day in a dose volume of 10 ml/kg/day for a total period of 14 weeks. Animals were observed daily for signs of toxicity. Body weight was recorded prior to the initial dose, at the initiation of dosing, and weekly thereafter. At the end of the study full serum chemistry and hematology analyses were performed. A full necropsy was performed on each animal and tissues and organs were preserved.
Results	NOAEL = 100 mg/kg/day
Remarks	During the study, there were 5 deaths that could not be attributed to treatment with the test substance. Males in the middle and high dose groups had significantly lower body weights and food consumption than the control animals. However, females did not display any differences in body weight or food consumption. Females in the middle and high dose group had statistically significant higher mean platelet counts compared to the control groups. The males did not show any significant differences in mean hematological values. Mean cholesterol increased in high-dose females and glucose decreased in middle-dose females and high-dose animals of both sexes. However, the significance of these findings to treatment with Alcohols, C11-14 iso, C13 rich is not clear. Males and females in the middle and high-dose groups had significantly higher liver weights than animals in the control group. High dose males had significantly lower body weights than the control animals. Relative mean brain and testes weights also increased in high-dose males, while relative adrenal weights increased in high-dose females. However, no treatment-related weight or histopathologic changes were observed in the other organs, including female reproductive organs.
Conclusions	Under the conditions of this study, subchronic oral exposure to the lowest concentration (100 mg/kg/day) of Alcohols, C11-14 iso, C13 rich was not toxic. At higher concentrations, there were some effects on hematologic profile and organ weight, but the significance of these changes is not known.

Data Quality	1 - Valid without restrictions
Reference	Exxon Biomedical Sciences, Inc. (1986); Subchronic oral gavage study in rats; Unpublished report.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C11-13, C12 rich
CAS No.	68526-58-9
Method/Guideline	NA
Type of Study	Oral LD_{50}
GLP	Pre-GLP
Year	1961
Species/strain	Rats /Sprague-Dawley
Sex	Male
No. of animals/sex/dose	5/dose
Route of administration	Oral gavage
Vehicle	Corn oil
Frequency of Treatment:	Single Treatment
Dose/Concentration Levels:	Either 0.1, 1.0, and 10.0% volume/volume in corn oil or undiluted. (Equivalent to 24.5, 77.4, 245, 774, 2446, and 7440 mg/kg)
Control group and Treatment:	For comparison, untreated animals were necropsied at the end of the study.
Remarks on Test Conditions	Prior to dosage, food was withheld from the animals for three hours. Following exposure, food and water was available at all times. The animals were observed for gross effects and mortality at 1, 4, and 24 hours and once daily thereafter for 7 days. Gross necropsies were performed at the end of the observation period. Tissue samples from the 2446 and 7440 mg/kg dose levels were collected for possible further analysis.
Results (LD_{50} or LC_{50}):	LD_{50} > 7740 mg/kg
Remarks	No mortalities were observed at any of the doses tested. Animals at all dosage levels exhibited normal appearance and behavior throughout the entire study and showed normal body weight gain. There were no pathological findings at necropsy.
Conclusions	Under the conditions of this study, Alkenes, C11-13, C12-rich have a low order of toxicity.
Data Quality	1 - Reliable without restrictions, comparable to a guideline study
Reference	Hazleton Laboratories, Inc.: Acute Oral Administration - Rats, Acute Dermal Application - Rabbits, Acute Eye Application - Rabbits, Acute Inhalation Exposure - Mice, Rats, Guinea Pigs; Performed for Esso Research and Engineering Co., 1961.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C11-13, C12 rich
CAS No.	68526-58-9
Method/Guideline	NA
Type of Study	Dermal LD_{50}
GLP	Pre-GLP
Year	1961
Species/strain	Albino rabbits
Sex	Males and Females
No. of animals/sex/dose	2/sex/dose
Route of administration	Dermal
Vehicle	NA
Frequency of Treatment:	Single 24-hour exposure
Dose/Concentration Levels:	77.4, 245, 774, 2446 mg/kg.
Control group and Treatment:	NA
Remarks on Test Conditions	Undiluted test material was applied to clipped, intact abdominal skin under rubber dental damming. The trunks of the animals were wrapped securely with adhesive binder to prevent ingestion of the test substance. Following the 24-hour exposure period, the binder was removed and the exposed area was sponged with warm water to remove residue. Animals were observed for gross signs of irritation and systemic toxicity daily for 7 days. Following the post-exposure observation period, animals were weighed, sacrificed and necropsied. Throughout the study, food and water were available at all times and animals were housed individually. Tissue samples were taken from animals at the 774 and 2446 mg/kg dose levels.
Results (LD_{50} or LC_{50}):	**LD_{50} > 2446 mg/kg**
Remarks	No mortalities were observed at any dose tested. One animal in the 245 mgl/kg dose group had diarrhea on the last day of the study and a net loss of weight. The remaining animals exhibited normal appearance and behavior throughout the entire study and showed normal body weight gain. One animal in the 1000 µl/kg and two animals in the 2446 mgl/kg dose groups had parasitic infections in the liver. No other abnormalities were observed at necropsy. Upon removal of the binders, the exposed skin showed slight erythema. Three of the high dose animals displayed slight edema, which subsided within 48 hours. By 48 hours, low dose animals showed no signs of irritation. Erythema in the high dose animals completely subsided by the third day. By Day 12, all signs of irritation had completely cleared in all of the animals with the exception of slight desquamation in one high dose animal.
Conclusions	Alkenes, C11-13, C12-rich have a low order of acute dermal toxicity.
Data Quality	1 - Reliable without restrictions; comparable to a guideline study.
Reference	Hazleton Laboratories, Inc.: Acute Oral Administration - Rats, Acute Dermal Application - Rabbits, Acute Eye Application - Rabbits, Acute Inhalation Exposure - Mice, Rats, Guinea Pigs; Performed for Esso Research and Engineering Co., 1961.
Date last changed	October, 2000

Acute Toxicity

Test Substance	Alkenes, C11-13, C12 rich
CAS No.	68526-58-9
Method/Guideline	NA
Type of Study	Inhalation LC_{50}
GLP	Pre-GLP
Year	1961
Species/strain	Mice/Swiss Albino, Rats/Wistar, Guinea pigs/English short hair
Sex	Males
No. of animals/sex/dose	10/species
Route of administration	Inhalation
Vehicle	NA
Frequency of Treatment:	Single Dose
Dose/Concentration Levels:	4.4 mg/L for 6 hours (saturated vapors only, no aerosol)
Control group and Treatment:	Control animals (5/sex/species) were exposed to clean air at the same flow rate as the treated group.
Remarks on Test Conditions	Air was bubbled through the test material and into a chamber to give a total flow through the chamber of 35 liters/minute. The theoretical mean chamber concentration (4.4 mg/L) was calculated from the loss of material and airflow through the chamber. Animals were observed throughout the exposure period for signs of toxicity. Following the exposure period, animals were observed for signs of toxicity daily for 14 days. Gross necropsies were performed on any animals that died during the study and all animals at the completion of the study.
Results (LD_{50} or LC_{50}):	**LC_{50} > 4.4 mg/L for 6 hours**
Remarks	Immediately following initiation of the exposure, all animals exhibited increased motor activity. Lacrimation was observed in rats and guinea pigs beginning at the 90-minute interval. Otherwise, all animals seemed normal in appearance and behavior throughout the study. No abnormalities were observed at necropsy.
Conclusions	Under conditions of this study, Alkenes, C11-13, C12 rich have a low order of acute inhalation toxicity in rats.
Data Quality	2 - Valid with restrictions. No analysis of exposure atmosphere.
Reference	Hazleton Laboratories, Inc.: Acute Oral Administration - Rats, Acute Dermal Application - Rabbits, Acute Eye Application - Rabbits, Acute Inhalation Exposure - Mice, Rats, Guinea Pigs; Performed for Esso Research and Engineering Co., 1961.
Date last changed	October, 2000

Olefin Hydroformylation Products Category

Robust Summaries
Environmental Fate and Effects

Prepared by:

ExxonMobil Chemical Company

November 19, 2001

Table of Contents

CAS #68526-58-9; Alkenes C12-14, C13 rich
Manometric Respirometry

Fish Acute Toxicity

Test Substance:	Hexanol branched and linear
CAS No.	68526-79-4
Method/Guideline:	No Data
Year (guideline):	No Data
Type (test type):	Flow Through Acute Fish Toxicity Test
GLP:	No Data
Year (study performed):	1980
Species:	Fathead Minnow (*Pimephales promelas*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method: (FT - ME)	Trimmed Spearman Karber Method
Test Conditions: (FT - TC) • **Note: Concentration prep., vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Treatment solutions were prepared by diluting a 3720mg/L stock solution. Nominal hexanol treatment levels were 41, 68, 113, 189, 315mg/L, which measured 26.7, 49.2, 90.6, 170.0, and 261.5mg/L, respectively. Control/dilution water was EPA Duluth laboratory water. Fifty fish were tested per treatment, divided into two replicates. Treatment volume = 6.3L. Test parameters were as follows: temperature=26.2 Deg C; dissolved oxygen = 6.2mg/L; pH = 7.6; fish age = 28 days old; fish mean wt = 0.117g; fish mean length = 19.7mm; fish loading = 0.464g/L/day. Organism supplier was U.S. EPA Environmental Research Lab, Duluth, MN, USA.
Results: (FT - RS) **Units/Value:**	96 hour LC50 = 97.7 mg/L (95% CI 89.7 to 106) based upon measured values
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was Gas-Liquid Chromatography.

Measured Conc. (mg/L)	Fish Total Mortality (@96 hrs)*
Control	0
26.7	0
49.2	0
90.6	20
170.0	50
261.5	50

* 50 fish added at test initiation

Conclusion: (FT - CL)	
Reliability: (FT - RL)	(1) Reliable without restriction
Reference: (FT - RE)	Brooke, L. T. et al. 1984. Acute Toxicities of Organic Chemicals to Fathead Minnows (Pimephales promelas), Vol. I. Center for Lake Superior Environmental Studies. University of Wisconsin-Superior, WS, USA.
Other (source): (FT - SO)	ExxonMobil Biomedical Sciences, Inc.

Fish Acute Toxicity

Test Substance:	Alcohols C6-8, branched
CAS No.	70914-20-4
Method/Guideline:	No Data
Year (guideline):	No Data
Type (test type):	Flow Through Acute Fish Toxicity Test
GLP:	No Data
Year (study performed):	1985
Species:	Fathead Minnow (*Pimephales promelas*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method: (FT - ME)	Trimmed Spearrman Karber Method
Test Conditions: (FT - TC) • **Note: Concentration prep., vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Treatment solutions were prepared by diluting a 1400mg/L stock solution. Nominal heptanol treatment levels were 12.5, 19.3, 29.7, 45.7, 70.3mg/L, which measured 12.5, 18.1, 28.5, 43.6, and 70.8mg/L, respectively. Control/dilution water was EPA Duluth laboratory water. Twenty fish were tested per treatment. Treatment volume = 2.0L. Test parameters were as follows: temperature=25.6 Deg C; dissolved oxygen = 7.1mg/L; pH = 7.7; fish age = 31 days old; fish mean wt = 0.100g; fish mean length = 18.1mm; fish loading = 1.0g/L/day. Organism supplier was U.S. EPA Environmental Research Lab, Duluth, MN, USA.
Results: (FT - RS) **Units/Value:**	96 hour LC50 = 34.5 mg/L (95% CI 33.1 to 36.0) based upon measured values
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was Gas-Liquid Chromatography.

Measured Conc. (mg/L)	Fish Total Mortality (@96 hrs)*
Control	0
12.5	0
18.1	1
28.5	0
43.6	20
70.8	20

* 20 fish added at test initiation

Conclusion: (FT - CL)	
Reliability: (FT - RL)	(1) Reliable without restriction
Reference: (FT - RE)	Geiger, D.L. et al. 1986. Acute Toxicities of Organic Chemicals to Fathead Minnows (Pimephales promelas), Vol. III. Center for Lake Superior Environmental Studies. University of Wisconsin-Superior, WS, USA.
Other (source): (FT - SO)	ExxonMobil Biomedical Sciences, Inc.

Invertebrate Acute Toxicity

Test Substance:	Alcohol C6-8, branched
CAS No.	70914-20-4
Method/Guideline:	Concept rules of the Dutch Standardization Institute (Adema, 1978)
Type (test type):	Daphnid Acute Toxicity Test
GLP:	No Data
Year (study performed):	1978
Species:	Water Flea (*Daphnia magna*)
Analytical Monitoring:	No
Exposure Period:	48 hour
Statistical Method:	No Data
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Tests using 15 different chemicals, including n-Heptanol, were performed at two different laboratories. Lab I was the National Institute of Public Health, Bilthoven, The Netherlands; Lab II was the Central Laboratory, T.N.O., Delft, The Netherlands. The tests were conducted using standardized tests methods proposed by the Dutch Standardization Institute (Adema, 1978). The tests were conducted in duplicate to determine the reprodicibility of the results. Organisms were supplied by in-house cultures. Age = <24 hours old.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	48-hour EC50 = 63 mg/L, based upon nominal concentrations of the test chemicals.
Conclusion:	Test substance is considered to have moderate acute toxicity
Reliability:	Code 2, Reliable with Restrictions
Reference:	Canton, J.H. and D.M.M. Adema. 1978. Reproducibility of Short-term and Reproduction Toxicity Experiments with *Daphnia magna* and Comparison of the Sensitivity of *Daphnia magna* with *Daphnia pulex* and *Daphnia cucullata* in Short-term Experiments. *Hydrobiologia*, **59**:2, pp. 135-140.

Other (reference)	Adema, D.M.M. 1978. Daphnia magna as Test Organism in Acute and Chronic Toxicity Experiments. *Hydrobiologia*, **59**:2, pp. 125-134.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Fish Acute Toxicity

Test Substance:	Alkenes, C6 Rich
CAS No.	68526-52-3
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Trimmed Spearman-Karber Method (Hamilton, M.A. et al. 1977. Trimmed Spearman-Karber Method for Estimating Median Lethal Concentration in Toxicity Bioassays. Environ. Sci. Technol. 11:714-719.)

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**

Each test solution was prepared by adding the test substance, via syringe, to 19.5 L of laboratory blend water in 20 L glass carboys. The solutions were mixed for 24 hours with a vortex of ≤10%. Mixing was performed using a magnetic stir plate and Teflon® coated stir bar at room temperature (approximately 22C). After mixing, the solutions were allowed to settle for one hour after which the Water Accommodated Fraction (WAF) was siphoned from the bottom of the mixing vessel through a siphon that was placed in the carboy prior to adding the test material. Test vessels were 4.0 L aspirator bottles that contained approximately 4.5 L of test solution. Each vessel was sealed with no headspace after 5 fish were added. Three replicates of each test material loading were prepared. Approximately 80% of each solution was renewed daily from a freshly prepared WAF.

Test material loading levels included: 6.25, 12.5, 25, 50, and 100 mg/L, which measured 2.9, 6.6, 13.4, 16.9, and 44.0 mg/L, respectively, and are based on the mean of samples taken from the new and old test solutions. A control containing no test material was included and the analytical results were below the quantitation limit, which was 0.2 mg/L.

Test temperature was 16C (sd = 0.04). Lighting was 623 to 629 Lux with a 16-hr light and 8-hr dark cycle. Dissolved oxygen ranged from 7.7 to 9.6 mg/L for "new" solutions and 4.5 to 7.5 mg/L for "old" solutions. The pH ranged from 8.2 to 8.5 for "new" solutions and 7.2 to 7.7 for "old" solutions.

Fish supplied by Thomas Fish Co. Anderson, CA, USA; age at test initiation = approximately 5 weeks; mean wt. at test termination = 0.272 g; mean total length at test termination = 3.5 cm; test loading = 0.24 g of fish/L. The fish were slightly shorter than the guideline suggestion of 4.0 to 6.0 cm, which were purposely selected to help maintain oxygen levels in the closed system. Fish size had no significant effect on study outcome.

Results:

Units/Value:

LC50 = 6.6mg/L (CI 5.4 to 8.0), based upon measured concentrations of mean of old and new samples.

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Analytical method used was GC-FID

LL50 = 12.8mg/L (CI 10.7 to 15.3), based upon nominal loading levels.

Loading Rate (mg/L)	Measured Conc. (mg/L)	Fish Total Mortality (@96 hrs)*
Control	Control	0
6.25	2.9	0
12.5	6.6	7
25	13.4	15
50	16.9	15
100	44.0	15

* 15 fish added at test initiation

Conclusion:

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 119058.

Other (source): American Chemistry Council, Higher Olefins Panel

Fish Acute Toxicity

Test Substance:	Alcohols C7-9, branched
CAS No.	68526-83-0
Method/Guideline:	No Data
Year (guideline):	No Data
Type (test type):	Flow Through Acute Fish Toxicity Test
GLP:	No Data
Year (study performed):	1986
Species:	Fathead Minnow (*Pimephales promelas*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method: (FT - ME)	Trimmed Spearman Karber Method
Test Conditions: (FT - TC) • **Note: Concentration prep., vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Treatment solutions were prepared by diluting a 275mg/L stock solution. Nominal octanol treatment levels were 8.6, 10.8, 13.5, 16.9, 21.1mg/L, which measured 8.8, 10.7, 12.7, 16.5, and 20.4mg/L, respectively. Control/dilution water was EPA Duluth laboratory water. Twenty fish were tested per treatment. Treatment volume = 2.0L. Test parameters were as follows: temperature=25.3 Deg C; dissolved oxygen = 7.1mg/L; pH = 7.7; fish age = 28 days old; fish mean wt = 0.075g; fish mean length = 16.5mm; fish loading = 0.75g/L/day. Organism supplier was U.S. EPA Environmental Research Lab, Duluth, MN, USA.
Results: (FT - RS) **Units/Value:**	96 hour LC50 = 14.0 mg/L (95% CI 13.6 to 14.5) based upon measured values
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was Gas-Liquid Chromatography.

Measured Conc. (mg/L)	Fish Total Mortality (@96 hrs)*
Control	0
8.8	0
10.7	1
12.7	2
16.5	20
20.4	20

* 20 fish added at test initiation

Conclusion: (FT - CL)	
Reliability: (FT - RL)	(1) Reliable without restriction
Reference: (FT - RE)	Geiger, D.L. et al. 1988. Acute Toxicities of Organic Chemicals to Fathead Minnows (Pimephales promelas), Vol. IV. Center for Lake Superior Environmental Studies. University of Wisconsin-Superior, WS, USA.
Other (source): (FT - SO)	ExxonMobil Biomedical Sciences, Inc.

Invertebrate Acute Toxicity

Test Substance:	Alcohol C7 - 9 branched
CAS No.	68526-83-0
Method/Guideline:	US EPA 660/3-75-009
Type (test type):	Methods for Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians
GLP:	Unknown
Year (study performed):	1980
Species:	Water Flea (*Daphnia magna* Straus)
Analytical Monitoring:	No
Exposure Period:	48 hour
Statistical Method:	Spearman-Karber (Finney, D.J., 1971)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Individual treatments were prepared by adding varying amounts of test material directly to 250 mL of dilution water in glass beakers. Nominal test concentrations were 10, 18, 32, 56, 100 and 180 mg/L. Four replicates were prepared for each treatment and control. Five daphnids per replicate chamber. Test placed in a temperature-controlled waterbath at 20.5 to 21.0 Deg. C. The test was performed under static conditions. Lighting was 16 hours light : 8 hours dark. Dissolved oxygen ranged from 8.6 to 9.6 mg/L during the study. The pH was ranged from 7.8 to 8.4 during the study. Dilution water hardness was 240 mg/L as $CaCO_3$, alkalinity was 145 mg/L as $CaCO_3$, and conductivity was 600 µmhos/cm. Organisms were supplied by in-house cultures. Age = <20 hours old.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	48-hour LC50 = 31.8 mg/L (CI 26.5 - 38.2) as Total Carbon, based upon nominal concentrations.

Results continued

Nominal Conc.	% Mortality @ 48 hr.
Control	0
10 mg/L	10
18 mg/L	20
32 mg/L	25
56 mg/L	95
100 mg/L	100
180 mg/L	100

Conclusion: Test substance is considered to have moderate acute toxicity.

Reliability: Code 2, Reliable with Restrictions

Analytical verification not performed, quality assurance unknown.

Reference: Union Carbide Corp. (1980). "The Acute Toxicity of MRD-80-4 to the Water Flea (*Daphnia magna* Straus). Unpublished report.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Biodegradation

Test Substance: Alcohols C7-9, branched

CAS No. 68526-83-0

Method/Guideline: OECD 301F, 1992

Type (test type): Manometric Respirometry Test

GLP: Yes

Year (study performed): 1997

Inoculum: Domestic activated sludge

Exposure Period: 28 days

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**

Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride).
Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption.
Test material was tested in triplicate, controls and blanks were tested in duplicate.
Test material concentration was approximately 51 mg/L. Sodium benzoate (positive control) concentration was 44mg/L.
Test temperature was 22 +/- 1 Deg C.

All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.

Results:

Units/Value:

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Test material was readily biodegradable. Half-life was reached by day 11. By day 28, 82% degradation of the test material was observed. 10% biodegradation was achieved on day 3.
By day 14, >60% biodegradation of positive control was observed, which met the guideline requirement. No excursions from the protocol were noted.
Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	84.7, 77.1, 84.0	82.0
Na Benzoate	91.3, 81.3	86.3

* replicate data

Conclusion: Test substance is considered readily biodegradable.

Reliability: Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences Inc., Ready Biodegradability : OECD 301F Manometric Respirometry Test. 114794A..
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Partition Coefficient

Test Substance:	Alcohol C7-9, branched
CAS No.	68526-83-0
Method/Guideline:	OECD 117
Year (guideline):	1989
Type (test type):	N-Octanol/Water Partition Coefficient (HPLC method)
GLP:	Yes
Year (study performed):	1998
Temperature:	~30 Deg C
Log Pow Value:	2.9 - 3.4
Test Conditions: • **Note: Concentration prep., vessel type, replication, test conditions.**	The test substance was evaluated as a solution in HPLC grade methanol. Six reference compounds were also evaluated in a standard combined reference solution (2-butanone, acetophenone, naphthalene, biphenyl, n-butylbenzene, and 4,4-DDT) in 75% methanol and 25% distilled water. The pH of the solution was 5.4. Two customized alcohol reference solutions were also prepared containing five of the ten alcohol compounds (1-hexanol, 1-heptanol, 1-octanol, 1-nonanol, 1-decanol, 1-undecanol, 1-dodecanol, 1-tridecanol, 1-tetradecanol, 1-pentadecanol) in 87.5% methanol and 12.5% distilled water. The pH of both solutions was 7.3. The pH of the evaluated solutions was the same as the reference solution it was evaluated against. The test substance was analyzed against a Standard Log Pow Reference Compound Solution and a customized Alcohol Reference Compound Solution. Only the peaks detected by refractive index (RI) were reported.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method.**	The test substance eluted as several groups. The three major components C7, C8, C9 alcohols had Log Pow values of 2.9, 3.0, and 3.4 respectively. The retention time for the 3 major components were 5.72, 6.03, and 7.28 minutes. All values were measured using High Performance Liquid Chromatography (HPLC).
Conclusion:	

Reliability:	(1) Reliable without restriction
Reference:	Exxon Biomedical Sciences Inc. 1998. N-Octanol/Water Partition Coefficient. Study #193387D.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Biodegradation

Test Substance:	Alkenes, C7-9, C8 Rich
CAS No.	68526-54-5
Method/Guideline:	OECD 301F, 1993
Type (test type):	Manometric Respirometry Test
GLP:	Yes
Year (study performed):	1995
Inoculum:	Domestic activated sludge
Exposure Period:	28 days
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride). Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption. Test material was tested in triplicate, controls and blanks were tested in duplicate. Test material concentration was approximately 32 mg/L. Sodium benzoate (positive control) concentration was 44mg/L. Test temperature was 22 +/- 1 Deg C. All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Approximately 29% biodegradation of the test material was measured on day 28. Approximately 10% biodegradation was achieved on day 17. By day 14, >60% biodegradation of the positive control was measured, which meets the guideline requirement. No excursions from the protocol were noted. Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	44.1, 28.6, 15.0	29.2
Na Benzoate	98.9,95.5	97.2

* replicate data

Conclusion:	
Reliability:	Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences Inc., Ready Biodegradability : OECD 301F Manometric Respirometry Test. 119194A..
Other (source):	American Chemistry Council, Higher Olefins Panel

Fish Acute Toxicity

Test Substance:	Alkenes, C7-9, C8 Rich
CAS No.	68526-54-5
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Trimmed Spearman-Karber Method (Hamilton, M.A. et al. 1977. Trimmed Spearman-Karber Method for Estimating Median Lethal Concentration in Toxicity Bioassays. Environ. Sci. Technol. 11:714-719.)

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**

Each test solution was prepared by adding the test substance, via syringe, to 19.5 L of laboratory blend water in 20 L glass carboys. The solutions were mixed for 24 hours with a vortex of ≤10%. Mixing was performed using a magnetic stir plate and Teflon® coated stir bar at room temperature (approximately 22C). After mixing, the solutions were allowed to settle for one hour after which the Water Accommodated Fraction (WAF) was siphoned from the bottom of the mixing vessel through a siphon that was placed in the carboy prior to adding the test material. Test vessels were 4.0 L aspirator bottles that contained approximately 4.5 L of test solution. Each vessel was sealed with no headspace after 4 fish were added. Three replicates of each test material loading were prepared. Approximately 80% of each solution was renewed daily from a freshly prepared WAF.

Test material loading levels included: 2.6, 4.3, 7.2, 12, and 20 mg/L, which measured 0.2, 0.4, 0.7, 1.2, and 2.5 mg/L, respectively, and are based on the mean of samples taken from the new and old test solutions. A control containing no test material was included and the analytical results were below the quantitation limit, which was 0.2 mg/L.

Test temperature was 15C (sd = 0.09). Lighting was 578 to 580 Lux with a 16-hr light and 8-hr dark cycle. Dissolved oxygen ranged from 8.5 to 10.2 mg/L for "new" solutions and 6.5 to 8.5 mg/L for "old" solutions. The pH ranged from 7.0 to 8.8 for "new" solutions and 7.0 to 8.4 for "old" solutions.

Fish supplied by Thomas Fish Co. Anderson, CA, USA; age at test

initiation = approximately 5 weeks; mean wt. at test termination = 0.272 g; mean total length at test termination = 3.5 cm; test loading = 0.24 g of fish/L. The fish were slightly shorter than the guideline suggestion of 4.0 to 6.0 cm, which were purposely selected to help maintain oxygen levels in the closed system. Fish size had no significant effect on study outcome.

Results:

Units/Value:

LC50 = 0.87mg/L (CI 0.79 to 0.96), based upon measured concentrations of mean of old and new samples.

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Analytical method used was GC-FID

LL50 = 8.9mg/L (CI 9.9 to 13.3), based upon nominal loading levels.

Loading Rate (mg/L)	Measured Conc. (mg/L)	Fish Total Mortality (@96 hrs)*
Control	Control	0
2.6	0.2	0
4.3	0.4	0
7.2	0.7	1
12	1.2	12
20	2.5	12

* 12 fish added at test initiation

Conclusion:

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 119158.

Other (source): American Chemistry Council, Higher Olefins Panel

Fish Acute Toxicity

Test Substance:	Alcohol C8 - 10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Bionomial Method
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Individual Water Accomodated Fractions (WAF's) were prepared for each test treatment. The test substance was added volumetrically, via a syringe, to 19L of dilution water in a 20L glass carboy. The solutions were mixed for 24 hours at a vortex of </= 10% of the total depth. The test solutions were pumped from each mixing vessel into three replicates of 4.5L in 4.0L glass aspirator bottles (no headspace). Five fish were added to each test replicate and the replicates sealed. Daily renewals were performed by removing ~80% of the test solution through the port at the bottom and refilling with fresh solution. Test temperature was 15.0 Deg C., Lighting was 16 hours light : 8 hours dark with 572 to 573 Lux during full daylight periods. Dissolved Oxygen at initiation ranged from 8.4 to 9.0 mg/L and from 4.8 to 6.3 mg/L in "old" solutions prior to renewals. The pH was ranged from 6.8 to 8.5 during the study. Fish were not fed during the study. Fish Mean Wt.= 0.361g. Mean Total length = 3.8cm, Test Loading = 0.40 g of fish/L.
Results: **Units/Value:**	LC50 = 10.1mg/L (CI 7.3 to 14.1), based upon measured concentrations of mean of old and new samples.
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was GC-FID LL50 = 11.2 mg/L (CI 7.5 to 16.6), based upon nominal loading levels.

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 96 hr.
Control	Below detection	0
0.7 mg/L	1.7 mg/L	0
1.5 mg/L	1.9 mg/L	0
3.3 mg/L	3.9 mg/L	0
7.5 mg/L	7.3 mg/L	0
16.6 mg/L	14.1 mg/L	100

Dissolved oxygen levels dropped below 60% of saturation in some of the treatments on Days 1 through 4 of the test. Since no mortality occurred in these treatments, the deviations are not believed to have affected the outcome of the study.

Conclusion: Test substance is considered to have moderate acute toxicity

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 114858.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Invertebrate Acute Toxicity

Test Substance:	Alcohol C8-10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline:	OECD 202 Daphnia sp. Acute Immobilization Test
Type (test type):	Daphnid Acute Toxicity Test
GLP:	Yes
Year (study performed):	1996
Species:	Water Flea (*Daphnia magna*)
Analytical Monitoring:	Yes
Exposure Period:	48 hour
Statistical Method:	Probit procedure of SAS (Finney, 1971)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Individual Water Accomodated Fractions (WAF's) were prepared for each test treatment. The test substance was added to 2.0L of dilution water in a 2L glass aspirator bottle. The solutions were mixed for 25 hours at a vortex of </= 20% of the total depth. The test solutions were removed through the outlet at the bottom of each mixing vessel into four replicates of 140 mL in 125 mL glass erlenmeyer flasks (no headspace). Five daphnids were added to each test replicate and the replicates sealed. The test was performed under static conditions with no aeration. Test temperature was 21.4 Deg C., Lighting was 16 hours light : 8 hours dark with 638 to 639 Lux during full daylight periods. Dissolved oxygen ranged from 7.3 to 8.2 mg/L during the study. The pH was ranged from 7.7 to 8.4 during the study. Organisms were supplied by in-house cultures. Age = <24 hours old, from 13 and 16-day old parents.
Results: **Units/Value:**	48-hour EC50 = 4.9 mg/L (CI 4.5 - 5.4), based upon measured concentrations of mean of old and new samples.
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was Total Organic Carbon (TOC).

	Nominal Conc.	Measured Conc.	% Immobilization @ 24 hr.
Results continued	Control	0	0
	1.56 mg/L	0.80 mg/L	0
	3.12 mg/L	1.82 mg/L	0
	6.25 mg/L	3.05 mg/L	0
	12.5 mg/L	4.39 mg/L	40
	25.0 mg/L	6.14 mg/L	85

Conclusion: Test substance is considered to have moderate acute toxicity

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Acute Toxicity for Daphnia, 149542.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Algal Toxicity

Test Substance:	Alcohol C8-10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline:	7-Day Cell Multiplication Inhibition Test
Type (test type):	Static Toxicity Test
GLP:	No Data
Year (study performed):	No Data
Species/Strain:	Green Alga (*Scenedesmus quadricauda*)
Analytical Monitoring:	No
Exposure Period:	7 days
Statistical Method:	None applied. The toxicity threshold (TT) was determined graphically by plotting the highest non-toxic concentration versus its mean extinction value against the lowest toxic concentration versus its mean extinction value and calculating the toxicant concentration at 3% below the no effect level.
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organism culture, age.**	Treatment solutions were prepared by diluting a stock isooctanol solution. Testing was conducted in metal capped, 300 ml Erlenmeyer flasks containing 50 ml of treatment solution. Treatment solutions contained isooctanol, cells, double distilled water, and a sterile, defined nutrient medium. The control solution contained nutrient medium, to which sterile double distilled water was added. Growth inhibition measurements were only determined on day 7. Cell growth was determined by using a turbidimetric procedure that measured primary light extinction (monochromatic radiation at 578 nm) through a cell suspension of 10 mm thickness.
Results: **Units/Value:** **Measurement (cells/growth)** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	7-day TT (toxicity threshold) for growth = 8.5 mg/L based on nominal values The TT value for growth is calculated by identifying the treatment level that is greater or equal to 3% below the treatment level that did not exhibit toxic effects as measured by the extinction of primary light of monochromatic radiation at 578 nm.
Conclusion:	

Reliability:	(2) Reliable with restrictions Although a non-standardized method was described in the article, data were not provided on the test parameters, replication, or results from individual treatment and control solutions. This lack of information supports a reliability rating of 2.
Reference:	Bringmann, G. and R. Kuhn. 1980. Comparison of the Toxicity Thresholds of Water Pollutants to Bacteria, Algae, and Protozoa in the Cell Multiplication Inhibition Test. Water Research. 14:231-241.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Partition Coefficient

Test Substance:	Alcohol C8-10 iso, C9 rich
CAS No.	68526-84-1
Method/Guideline:	OECD 117
Year (guideline):	1989
Type (test type):	N-Octanol/Water Partition Coefficient (HPLC method)
GLP:	Yes
Year (study performed):	1998
Temperature:	~30 Deg C
Log Pow Value:	3.4 - 3.9
Test Conditions: • **Note: Concentration prep., vessel type, replication, test conditions.**	The test substance was evaluated as a solution in HPLC grade methanol. Six reference compounds were also evaluated in a standard combined reference solution (2-butanone, acetophenone, naphthalene, biphenyl, n-butylbenzene, and 4,4-DDT) in 75% methanol and 25% distilled water. The pH of the solution was 5.4. Two customized alcohol reference solutions were also prepared containing five of the ten alcohol compounds (1-hexanol, 1-heptanol, 1-octanol, 1-nonanol, 1-decanol, 1-undecanol, 1-dodecanol, 1-tridecanol, 1-tetradecanol, 1-pentadecanol) in 87.5% methanol and 12.5% distilled water. The pH of both solutions was 7.3. The pH of the evaluated solutions was the same as the reference solution it was evaluated against. The test substance was analyzed against a Standard Log Pow Reference Compound Solution and a customized Alcohol Reference Compound Solution. Only the peaks detected by refractive index (RI) were reported.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method.**	The test substance eluted as several groups. The three major components C8, C9, C10 alcohols had Log Pow values of 3.4, 3.8, and 3.9 respectively. The retention time for the 3 major components were 6.91, 8.42, and 8.96 minutes. All values were measured using High Performance Liquid Chromatography (HPLC).
Conclusion:	

Reliability:	(1) Reliable without restriction
Reference:	Exxon Biomedical Sciences Inc. 1998. N-Octanol/Water Partition Coefficient. Study #193387D.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Fish Acute Toxicity

Test Substance:	Alcohol C9 - 11 iso, C10 rich
CAS No.	68526-85-2
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Probit procedure of SAS (Finney, 1971)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Individual Water Accomodated Fractions (WAF's) were prepared for each test treatment. The test substance was added volumetrically, via a syringe, to 19.5L of dilution water in a 20L glass carboy. The carboys were covered with an opaque covering to prevent photochemical degradation of the soluble components. The solutions were mixed for 24 hours at a vortex of </= 10% of the total depth. The test solutions were pumped from each mixing vessel into three replicates of 4.5L in 4.0L glass aspirator bottles (no headspace). Five fish were added to each test replicate and the replicates sealed. Daily renewals were performed by removing ~80% of the test solution through the port at the bottom and refilling with fresh solution. Test temperature was 15.0 Deg C., Lighting was 16 hours light : 8 hours dark with 569 to 572 Lux during full daylight periods. Dissolved Oxygen at initiation ranged from 8.4 to 9.9 mg/L and from 5.7 to 7.6 mg/L in "old" solutions prior to renewals. The pH was ranged from 7.0 to 8.5 during the study. Fish were not fed during the study. Fish Mean Wt.= 0.185g. Mean Total length = 3.0cm, Test Loading = 0.21 g of fish/L.
Results: **Units/Value:**	LC50 = 3.1mg/L (CI 2.4 to 4.0), based upon measured concentrations of mean of old and new samples.
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was GC-FID LL50 = 3.0 mg/L (Could not calculate CI), based upon nominal loading levels.

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 96 hr.
Control	Below detection	7
1.2 mg/L	1.2 mg/L	13
2.5 mg/L	2.4 mg/L	13
5 mg/L	5.2 mg/L	100
10 mg/L	9.9 mg/L	100
20 mg/L	19.5 mg/L	100

Dissolved oxygen levels dropped below 60% (57%)of saturation in the 2.4 mg/L treatment on Days 3 and 4 of the test. Since only 13% mortality occurred at this level, and the solutions were renewed daily, this drop in DO did not affect the outcome of the study.

Conclusion: Test substance is considered to have moderate acute toxicity

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 114958.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Biodegradation

Test Substance: Alcohol C9 - 11 iso, C10 rich

CAS No. 68526-85-2

Method/Guideline: OECD 301F, 1992

Type (test type): Manometric Respirometry Test

GLP: Yes

Year (study performed): 1997

Inoculum: Domestic activated sludge

Exposure Period: 28 days

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**

Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride).
Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption.
Test material was tested in triplicate, controls and blanks were tested in duplicate.
Test material concentration was approximately 43 mg/L. Sodium benzoate (positive control) concentration was 44mg/L.
Test temperature was 22 +/- 1 Deg C.

All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.

Results:

Units/Value:

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Test material was readily biodegradable. Half-life was reached by day 11. By day 28, 71.1% degradation of the test material was observed. 10% biodegradation was achieved on day 4.
By day 14, >60% biodegradation of positive control was observed, which met the guideline requirement. No excursions from the protocol were noted.
Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	74.0, 72.6, 66.5	71.1
Na Benzoate	91.3, 81.3	86.3

* replicate data

Conclusion: Test substance is considered readily biodegradable.

Reliability: Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences Inc., Ready Biodegradability : OECD 301F Manometric Respirometry Test. 114994A..
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Partition Coefficient

Test Substance:	Alcohol C9 - 11 iso, C10 rich
CAS No.	68526-85-2
Method/Guideline:	OECD 117
Year (guideline):	1989
Type (test type):	N-Octanol/Water Partition Coefficient (HPLC method)
GLP:	Yes
Year (study performed):	1998
Temperature:	~30 Deg C
Log Pow Value:	3.8
Test Conditions: • **Note: Concentration prep., vessel type, replication, test conditions.**	The test substance was evaluated as a solution in HPLC grade methanol. Six reference compounds were also evaluated in a standard combined reference solution (2-butanone, acetophenone, naphthalene, biphenyl, n-butylbenzene, and 4,4-DDT) in 75% methanol and 25% distilled water. The pH of the solution was 5.4. Two customized alcohol reference solutions were also prepared containing five of the ten alcohol compounds (1-hexanol, 1-heptanol, 1-octanol, 1-nonanol, 1-decanol, 1-undecanol, 1-dodecanol, 1-tridecanol, 1-tetradecanol, 1-pentadecanol) in 87.5% methanol and 12.5% distilled water. The pH of both solutions was 7.3. The pH of the evaluated solutions was the same as the reference solution it was evaluated against. The test substance was analyzed against a Standard Log Pow Reference Compound Solution and a customized Alcohol Reference Compound Solution. Only the peaks detected by refractive index (RI) were reported.
Results: **Units/Value:**	The test substance eluted as several groups. The two major components C9, C10 alcohols had Log Pow values of 3.8.
• **Note: Deviations from protocol or guideline, analytical method.**	The retention time for the 2 major components were 8.37, and 8.74 minutes. All values were measured using High Performance Liquid Chromatography (HPLC).
Conclusion:	

Reliability:	(1) Reliable without restriction
Reference:	Exxon Biomedical Sciences Inc. 1998. N-Octanol/Water Partition Coefficient. Study #193387D.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Fish Acute Toxicity

Test Substance:	Alcohol C10 - 12, C11 rich
CAS No.	90604-37-8
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Probit procedure of SAS (Finney, 1971)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Individual Water Accomodated Fractions (WAF's) were prepared for each test treatment. The test substance was added volumetrically, via a syringe, to 19.5L of dilution water in a 20L glass carboy. The solutions were mixed for 24 hours at a vortex of </= 10% of the total depth. The test solutions were pumped from each mixing vessel into three replicates of 4.5L in 4.0L glass aspirator bottles (no headspace). Five fish were added to each test replicate and the replicates sealed. Daily renewals were performed by removing ~80% of the test solution through the port at the bottom and refilling with fresh solution. Test temperature was 15 Deg C., Lighting was 16 hours light : 8 hours dark with 572 to 573 Lux during full daylight periods. Dissolved Oxygen at initiation ranged from 8.4 to 10.0 mg/L and from 4.8 to 6.4 mg/L in "old" solutions prior to renewals. The pH was ranged from 6.8 to 8.6 during the study. Fish were not fed during the study. Fish Mean Wt.= 0.365g. Mean Total length = 3.6cm, Test Loading = 0.40 g of fish/L.
Results: **Units/Value:**	LC50 = 1.8 mg/L (CI 1.4 to 2.5), based upon measured concentrations of mean of old and new samples.
• **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Analytical method used was GC-MSD LL50 = 2.1 mg/L (CI 1.7 to 2.8), based upon nominal loading levels.

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 96 hr.
Control	Below detection	0
0.3 mg/L	0.48 mg/L	13
0.5 mg/L	0.52 mg/L	0
1.4 mg/L	1.1 mg/L	0
3.5 mg/L	3.1 mg/L	100
8.8 mg/L	7.2 mg/L	100

Dissolved oxygen levels dropped below 60% (40-60%) of saturation in some of the treatments on Days 1 through 4 of the test. Based on mortality observations, these deviations are not believed to have affected the outcome of the study.

Conclusion: Test substance is considered to have moderate acute toxicity

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 118458.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Fish Acute Toxicity

Test Substance:	Alkenes, C9-11, C10 Rich
CAS No.	68526-56-7
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1995
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Trimmed Spearman-Karber Method (Hamilton, M.A. et al. 1977. Trimmed Spearman-Karber Method for Estimating Median Lethal Concentration in Toxicity Bioassays. Environ. Sci. Technol. 11:714-719.)

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**

Each test solution was prepared by adding the test substance, via syringe, to 19.5 L of laboratory blend water in 20 L glass carboys. The solutions were mixed for 24 hours with a vortex of <10%. Mixing was performed using a magnetic stir plate and Teflon® coated stir bar at room temperature (approximately 22C). After mixing, the solutions were allowed to settle for one hour after which the Water Accommodated Fraction (WAF) was siphoned from the bottom of the mixing vessel through a siphon that was placed in the carboy prior to adding the test material. Test vessels were 4.0 L aspirator bottles that contained approximately 4.5 L of test solution. Each vessel was sealed with no headspace after 4 fish were added. Three replicates of each test material loading were prepared. Approximately 80% of each solution was renewed daily from a freshly prepared WAF.

Test material loading levels included: 0.2, 0.4, 1.2, 3.5, and 10 mg/L, which measured 0.01, 0.03, 0.06, 0.08, and 2.6 mg/L, respectively, and are based on the mean of samples taken from the new and old test solutions. A control containing no test material was included and the analytical results were below the quantitation limit, which was 0.03 mg/L.

Test temperature was 16C (sd = 0.2). Lighting was 445 to 555 Lux with a 16-hr light and 8-hr dark cycle. Dissolved oxygen ranged from 8.7 to 9.9 mg/L for "new" solutions and 7.2 to 8.5 mg/L for "old" solutions. The pH ranged from 7.0 to 8.8 for "new" solutions and 7.3 to 8.7 for "old" solutions.

Fish supplied by Thomas Fish Co. Anderson, CA, USA; age at test initiation = approximately 5 weeks; mean wt. at test termination = 0.175 g; mean total length at test termination = 3.0 cm; test loading = 0.19 g of fish/L. The fish were slightly shorter than the guideline suggestion of 4.0 to 6.0 cm, which were purposely selected to help maintain oxygen levels in the closed system. Fish size had no significant effect on study outcome.

Results:

Units/Value:

96-hour LL50 = 4.8 mg/L (95% CI 3.8 to 6.0 mg/L) based upon loading rates.
96-hour LC50 = 0.12 mg/L (95% CI 0.11 to 0.14 mg/L) based upon measured values of old and new solutions.

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Analytical method used was Headspace Gas Chromatography with Flame Ionization Detection (GC-FID).

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 96 hr.*
Control	Control	0
0.2 mg/L	0.01 mg/L	0
0.4 mg/L	0.03 mg/L	0
1.2 mg/L	0.06 mg/L	0
3.5 mg/L	0.08 mg/L	3
10.0 mg/L	0.26 mg/L	15**

* 15 fish added at test initiation

** 1 mortality not test related

Conclusion:

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 119258.

Other (source): American Chemistry Council, Higher Olefins Panel

Biodegradation

Test Substance: Alkenes, C9-11, C10 Rich

CAS No. 68526-56-7

Method/Guideline: OECD 301F, 1993

Type (test type): Manometric Respirometry Test

GLP: Yes

Year (study performed): 1995

Inoculum: Domestic activated sludge

Exposure Period: 28 days

Test Conditions:

- **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**

Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride).
Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption.
Test material was tested in triplicate, controls and blanks were tested in duplicate.
Test material concentration was approximately 42 mg/L. Sodium benzoate (positive control) concentration was 44mg/L.
Test temperature was 22 +/- 1 Deg C.

All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.

Results:

Units/Value:

- **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**

Test material was not readily biodegradable. Approximately 21% biodegradation of the test material was measured on day 28. Approximately 10% biodegradation was achieved on Day 17. By day 14, >60% biodegradation of positive control was observed, which met the guideline requirement. No excursions from the protocol were noted.
Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	20.9, 19.9, 22.6	21.1
Na Benzoate	98.9,95.5	97.2

* replicate data

Conclusion: Test substance is considered not readily biodegradable.

Reliability: Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences, Inc. 1997. Ready Biodegradability: OECD 301F Manometric Respirometry. Study #119294A.
Other (source):	American Chemistry Council, Higher Olefins Panel

Fish Acute Toxicity

Test Substance:	Alcohol C11 - 14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline:	OECD 203 Fish Acute Toxicity Test
Type (test type):	Fish Acute Toxicity Test
GLP:	Yes
Year (study performed):	1998
Species:	Rainbow Trout (*Oncorhynchus mykiss*)
Analytical Monitoring:	Yes
Exposure Period:	96 hour
Statistical Method:	Spearman-Karber Method (Hamilton, et al, 1977)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, weight, loading.**	Individual Water Accomodated Fractions (WAF's) were prepared for each test treatment. The test substance was added volumetrically, via a syringe, to 19L of dilution water in a 20L glass carboy. The solutions were mixed for 24 hours at a vortex of </= 10% of the total depth. The test solutions were pumped from each mixing vessel into three replicates of 4.5L in 4.0L glass aspirator bottles (no headspace). Five fish were added to each test replicate and the replicates sealed. Daily renewals were performed by removing ~80% of the test solution through the port at the bottom and refilling with fresh solution. Test temperature was 13.8 Deg C., Lighting was 16 hours light : 8 hours dark with 551 to 736 Lux during full daylight periods. Dissolved Oxygen at initiation ranged from 8.3 to 9.2 mg/L and from 6.6 to 8.8 mg/L in "old" solutions prior to renewals. The pH was ranged from 6.6 to 8.2 during the study. Fish were not fed during the study. Fish Mean Wt.= 0.131g. Mean Total length = 2.7cm, Test Loading = 0.15 g of fish/L.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	LC50 = 0.42 mg/L (CI 0.37 to 0.48), based upon measured concentrations of mean of old and new samples. Analytical method used was GC-MSD LL50 = 0.64 mg/L (CI 0.57 to 0.73), based upon nominal loading levels.

survival.

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 96 hr.
Control	Below detection	0
0.25 mg/L	0.17 mg/L	0
0.5 mg/L	0.32 mg/L	13
1.0 mg/L	0.67 mg/L	100
2.0 mg/L	0.94 mg/L	100
5.0 mg/L	0.93 mg/L	100

Conclusion: Test substance is considered to have high acute toxicity

Reliability: Code 1, Reliable without Restrictions

Reference: Exxon Biomedical Sciences, Inc. Fish Acute Toxicity Test, 118358A.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Invertebrate Acute Toxicity

Test Substance:	Alcohol C11 - 14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline:	US EPA TSCA 797.1300
Type (test type):	Daphnid Acute Toxicity Test
GLP:	Unknown
Year (study performed):	1986
Species:	Water Flea (*Daphnia magna*)
Analytical Monitoring:	Yes
Exposure Period:	48 hour
Statistical Method:	Probit procedure based on Litchfield-Wilcoxon (1949)
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	The water soluble fraction (WSF) was prepared by combining the test substance with dilution water at a ratio of 1:150. The solutions were mixed for 96 hours and allowed to settle for 1 hour prior to use as the 100% WSF stock solution. Test solutions were prepared by diluting the 100% WSF stock. Two replicates of 250 mL in 400 mL autoclaved glass beakers were prepared at each treatment level. Ten daphnids per replicate chamber. Test chambers were covered with glass and placed in a temperature-controlled waterbath. The test was performed under static conditions. Test temperature was 20.8 Deg C., Lighting was 16 hours light : 8 hours dark with 57.5 to 67.3 footcandles during full daylight periods. Dissolved oxygen ranged from 8.1 to 9.1 mg/L during the study. The pH was ranged from 7.8 to 8.2 during the study. Dilution water hardness was 130 mg/L as $CaCO_3$. Organisms were supplied by in-house cultures. Age = <24 hours old from 19-day old parents.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	48-hour LC50 = 0.71 mg/L (CI 0.59 - 0.85) as Total Carbon, based upon mean measured concentrations of Day 0 and Day 2 samples. 48-hour LC50 value equivalent to 16.7% WSF. Analytical method used was Total Carbon

Results continued

Nominal Conc.	Measured Conc.	% Mortality @ 48 hr.
Control	-	0
6.25% WSF	0.28 mg/L	0
12.5% WSF	0.58 mg/L	30
25% WSF	1.03 mg/L	85
50% WSF	1.85 mg/L	100
100% WSF	4.17 mg/L	100

Conclusion: Test substance is considered to have high acute toxicity.

Reliability: Code 2, Reliable with Restrictions

Analytical verification not test substance specific, quality assurance unknown.

Reference: Exxon Biomedical Sciences, Inc. Static Acute Daphnia Toxicity Test, 269342.

Other (source): ExxonMobil Biomedical Sciences, Inc.

Biodegradation

Test Substance:	Alcohol C11 - 14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline:	OECD 301F, 1992
Type (test type):	Manometric Respirometry Test
GLP:	Yes
Year (study performed):	1998
Inoculum:	Domestic activated sludge
Exposure Period:	28 days
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride). Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption. Test material was tested in triplicate, controls and blanks were tested in duplicate. Test material concentration was approximately 57 mg/L. Sodium benzoate (positive control) concentration was 44mg/L. Test temperature was 22 +/- 1 Deg C. All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Test material was not readily biodegradable. Half-life was reached by day 25. By day 28, 58.1% degradation of the test material was observed. 10% biodegradation was achieved on day 7. By day 14, >60% biodegradation of positive control was observed, which met the guideline requirement. No excursions from the protocol were noted. Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	60.1, 60.7, 53.7	58.1
Na Benzoate	87.1, 85.4	86.2

* replicate data

Conclusion:	Test substance is considered not readily biodegradable.
Reliability:	Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences Inc., Ready Biodegradability : OECD 301F Manometric Respirometry Test. 180294A..
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Partition Coefficient

Test Substance:	Alcohol C11 - 14 iso, C13 rich
CAS No.	68526-86-3
Method/Guideline:	OECD 117
Year (guideline):	1989
Type (test type):	N-Octanol/Water Partition Coefficient (HPLC method)
GLP:	Yes
Year (study performed):	1998
Temperature:	~30 Deg C
Log Pow Value:	4.2 - 5.0
Test Conditions: • **Note: Concentration prep., vessel type, replication, test conditions.**	The test substance was evaluated as a solution in HPLC grade methanol. Six reference compounds were also evaluated in a standard combined reference solution (2-butanone, acetophenone, naphthalene, biphenyl, n-butylbenzene, and 4,4-DDT) in 75% methanol and 25% distilled water. The pH of the solution was 5.4. Two customized alcohol reference solutions were also prepared containing five of the ten alcohol compounds (1-hexanol, 1-heptanol, 1-octanol, 1-nonanol, 1-decanol, 1-undecanol, 1-dodecanol, 1-tridecanol, 1-tetradecanol, 1-pentadecanol) in 87.5% methanol and 12.5% distilled water. The pH of both solutions was 7.3. The pH of the evaluated solutions was the same as the reference solution it was evaluated against. The test substance was analyzed against a Standard Log Pow Reference Compound Solution and a customized Alcohol Reference Compound Solution. Only the peaks detected by refractive index (RI) were reported.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method.**	The test substance eluted as several groups. The five major components C9, C10, C11, C12, C13 alcohols had Log Pow values of 4.2, 4.4, 4.5, 4.7, and 5.0 respectively. The retention time for the 4 major components were 11.04, 12.02, 13.53, 14.69, and 18.40 minutes. All values were measured using High Performance Liquid Chromatography (HPLC).
Conclusion:	

Reliability:	(1) Reliable without restriction
Reference:	Exxon Biomedical Sciences Inc. 1998. N-Octanol/Water Partition Coefficient. Study #193387D.
Other (source):	ExxonMobil Biomedical Sciences, Inc.

Biodegradation

Test Substance:	Alkenes, C12-14, C13 Rich
CAS No.	68526-58-9
Method/Guideline:	OECD 301F, 1993
Type (test type):	Manometric Respirometry Test
GLP:	Yes
Year (study performed):	1995
Inoculum:	Domestic activated sludge
Exposure Period:	28 days
Test Conditions: • **Note: Concentration prep. vessel type, volume, replication, water quality parameters, environmental conditions, organisms supplier, age, size, loading.**	Non acclimated activated sludge and test medium were combined prior to test material addition. Test medium consisted of glass distilled water and mineral salts (Phosphate buffer, Ferric chloride, Magnesium sulfate, Calcium chloride). Test vessels were 1L glass flasks placed in a waterbath and electronically monitored for oxygen consumption. Test material was tested in triplicate, controls and blanks were tested in duplicate. Test material concentration was approximately 45 mg/L. Sodium benzoate (positive control) concentration was 50mg/L. Test temperature was 22 +/- 1 Deg C. All test vessels were stirred constantly for 28 days using magnetic stir bars and plates.
Results: **Units/Value:** • **Note: Deviations from protocol or guideline, analytical method, biological observations, control survival.**	Test material was not readily biodegradable. Approximately 8% biodegradation of the test material was measured on day 28. By day 14, >60% biodegradation of positive control was observed, which met the guideline requirement. No excursions from the protocol were noted. Biodegradation was based on oxygen consumption and the theoretical oxygen demand of the test material as calculated using results of an elemental analysis of the test material.

Sample	% Degradation* (day 28)	Mean % Degradation (day 28)
Test Material	6.28, 8.26, 8.35	7.63
Na Benzoate	88.2, 86.5	87.4

* replicate data

Conclusion:	Test substance is considered not readily biodegradable.
Reliability:	Code 1, Reliable without Restrictions

Reference:	Exxon Biomedical Sciences, Inc. 1997. Ready Biodegradability: OECD 301F Manometric Respirometry. Study #119394A.
Other (source):	American Chemistry Council, Higher Olefins Panel